

MACWEEK

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In Reviews

Apple pencils in pen-Mac plans: First model limited to large sites

By Matthew Rothenberg

Cupertino, Calif. — Apple is reportedly looking to ink deals with major corporate buyers for a pen-based Macintosh Duo designed for sale directly to large sites.

The company next month will begin seeding customers with prototypes of the device as part of a massive test-marketing effort that will eventually involve hundreds of prototype units, sources said. Apple hopes to ship its first pen product late this summer, although handwriting recognition may not be available until the end of the year. Sources said the device will probably cost several hundred dollars more than current Duo models.

The pen device is based on a 33-



MHz 68030 processor and can accommodate up to 32 Mbytes of RAM, sources said. Like the existing Duos, the pen Mac can be docked for desktop use, but its keyboard will be a separate, detachable unit.

According to sources, the first model will use the standard Finder along with a "digital-ink" system extension that stores pen strokes as bit-mapped graphics and allows some checklist-style input to applications such as forms programs. The initial configuration will not support handwriting recognition.

According to some sources, Redwood Shores, Calif.-based Communication Intelligence Corp. will

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Security chips trigger alarm

Clipper and Capstone open digital back door

By Mitch Ratcliffe

Washington — The White House and National Security Agency, as part of a wide-ranging retooling of U.S. privacy policies, are preparing two encryption chips for use in the computer and telecommunications industries. Privacy advocates cried foul last week because the chips include a back door that allows police to monitor communications.

The Clipper chip announced this month can encrypt voice and data communications at up to 16 Mbps. Clipper is due to debut in secure telephones from AT&T Co. this summer. The second chip, called Capstone and currently

under development at the NSA, is a superset of Clipper that will implement the much-criticized Digital Signature Standard to add authentication capabilities. Its existence was revealed during a briefing at the Massachusetts Institute of Technology in Cambridge last week.

President Clinton ordered the National Institute of Standards and Technology to establish Clipper as a federal standard. Since the government is the largest computer customer in the world, its Federal Information Processing Standards (FIPS) often are imposed on the industry as de facto standards.

If Capstone follows Clipper into the FIPS requirements, DSS could usurp RSA Data Security Inc.'s public-key encryption scheme, which Apple licensed for

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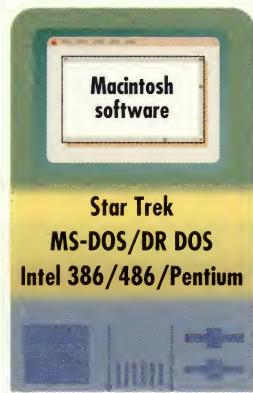
Novell, Apple team up to launch Mac system into DOS universe

By Mitch Ratcliffe

San Francisco — In a move to prevent Microsoft Corp. from achieving total domination of the corporate desktop, Novell Inc. is putting its credibility with business buyers behind Apple's efforts to bring a version of the Macintosh environment to IBM PCs and compatibles.

Novell plans to introduce an Intel-compatible version of the Mac Finder and Toolbox, combined with Novell's DR DOS operating system and network client software, in the first half of next year.

For Apple the new software will be the first piece in a family of multi-platform technologies collectively called Companion. The project also involves plans for a thorough overhaul of the Mac interface over



the next several years.

The first fruit of the Apple-Novell collaboration, running on Intel 386, 486 and Pentium CPUs, will provide a multitasking environment that will run both existing character-based DOS programs and ported versions of Mac applications. The companies reportedly are

investigating ways to support Windows applications as well, but sources said that problem has not been solved.

Intel Corp. is providing Apple and Novell with technical assistance and compatibility testing, sources said.

The partners have already explained the plan to cross-platform application vendors, and more developers will be briefed at the Apple Worldwide Developers Conference

See Apple-Novell, Page 128

Windows alternative faces an uphill course

By Mitch Ratcliffe

San Francisco — The die has been cast for a new era in Macintosh computing, and developers and analysts are beginning to assess the implications and prospects of the Apple-Novell Inc. plan to bring the Finder and Mac Toolbox to Intel-based personal computers.

Apple and Novell reportedly want to pitch the Mac-like operating environment they are developing to two classes of IBM PC and compatible users who are already facing a transition in their computing environment.

First are those who use character-based DOS but are considering moving to a graphical user interface. Since shifting to a GUI in any case requires new applications and training,

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Special Report

Printers

In-depth information on:

- 600-dpi printers •
- PostScript printers under \$1,000 • LaserWriter
- hardware upgrades •
- PostScript printer clones
- Portable printers •
- Poster printing software

See Page 40

Motorola claims PowerPC chips will outperform Intel Pentium

By Henry Norr

Austin, Texas — Newly disclosed details about the PowerPC 601 suggest that the new RISC processor could give Apple a significant price-performance advantage relative to Intel-based competitors.

Motorola Inc., which is developing the chip in collaboration with IBM Corp. and Apple, last week announced that it has begun general sampling of 50- and 66-MHz versions of the first member of the new processor family, which is expected to show up in Apple and IBM systems early next year.

According to the Motorola announcement, the 601 will outperform rival Intel Corp.'s much-heralded Pentium processor yet cost system manufacturers significantly less.

Based on initial measurements

with the industry-standard SPECmark92 benchmark suite, Motorola said, the 66-MHz PowerPC 601 is expected to deliver integer performance of 60 SPECint92 and floating-point performance of 80 SPECfp92; the 50-MHz version will offer about three-quarters the performance. A 66-MHz Pentium, according to Intel, scores 64.5 SPECint92 and 56.9 SPECfp92.

Most Mac applications rely primarily on integer routines, but programs that do intensive number crunching, including some graphics software, depend heavily on floating-point performance.

The 50-MHz PowerPC 601, according to the announcement, will sell for \$280 each in volumes of 20,000; the 66-MHz version will be

See PowerPC, Page 127



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FastCache Quadra is the recommended upgrade for every Quadra user. As MacUser says... "if you own a Quadra, you're cheating yourself if you don't

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speed gain all day long! **And it's cost effective too.** In the words of the MacUser Eddy Staff... "the DayStar FastCache Quadra represents an excellent

price/performance value... a simple and inexpensive way to accelerate members of the Quadra family". Simply plug this card in and you're on your way!

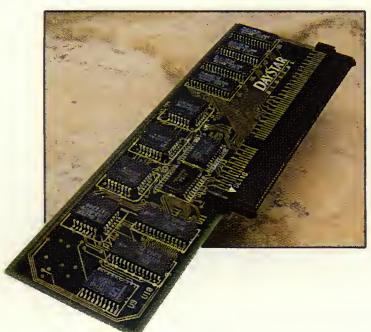
Choose your card. MacUser states... "two DayStar FastCache Quadra cards, one for the 700 and 900 (\$299) and one that works in the Quadra 700,

(800), 900 and 950 (\$449) – inexpensive 128K cache cards". **From DayStar, the leader in acceleration.** MacWorld says...

"DayStar pays attention to detail – a good indication of quality". **Even more.** But that's not all, Macworld says it best...

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New Mac virus set to strike on the next Friday the 13th

Capable of infecting all kinds of files

By Henry Norr

Hanover, N.H. — Yet another new Macintosh virus — the second this month — has surfaced, and this one apparently is capable of causing serious disruption on infected systems.

Tentatively dubbed INIT M, the virus was discovered at Dartmouth College here. According to early analyses by virus experts, it can infect all kinds of files — including extensions, preference files, documents and applications — but only under System 7.

The virus is designed to go off on any Friday the 13th, when it will change file and folder names and files' type and creator codes to random strings.

File creation and modification dates are changed to Jan. 1, 1904, and in some cases one file or folder

may be renamed Virus MindCrime. The virus reportedly also creates a file called FSV Prefs in the Preferences folder within the System folder on infected disks.

The only Friday the 13th this year is in August.

At press time, commercial, shareware and freeware anti-virus developers reportedly were still working on analyzing the virus and creating search strings and remedies.

Central Point Software Inc. of Beaverton, Ore., said it was about to post an antidote for use with its Anti-Virus utility, and other developers said they were working on the problem.

A joint statement describing the virus and developers' plans to offer remedies was expected to be posted on on-line services, as has become customary when new viruses are discovered.

The new virus apparently is unrelated to the INIT 17 virus discovered earlier this month (see MacWEEK, April 19). □

QuickTime 1.6 to play movies faster

Upgrade lets Macs record CD sound

By Nathalie Welch

Cupertino, Calif. — Apple next month will ship QuickTime 1.6, an upgrade that will bring better color, sound and performance to the multimedia software.

The new version will play back movies 10 percent faster than QuickTime 1.5, according to the company.

The improved QuickTime will be added to the System 7.1 upgrade kit, bundled with all new Macs and offered through on-line services and user groups.

The QuickTime revision includes Sound Manager 3.0, an upgrade that lets Macs with third-party cards record and play CD-quality 16-bit sound.

Movie makers will be able to use Sound Manager 3.0 to import sounds from CD sources into a QuickTime 1.6 movie. Apple said it plans to license Sound Manager 3.0 to third-party hardware and software developers.

Support for Apple's color-matching technology, ColorSync, enables QuickTime 1.6 movies to run on different Macs without color changes.

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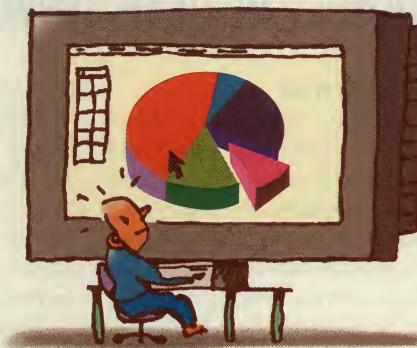


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Mac the Knife

- | | |
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| 130 PowerBook prices may never be this low again
Re-engineered 145 logic board makes it possible. | 128 Advertiser Index |
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Connectix upgrades PB utility

Power management enhanced in CPU 2.0

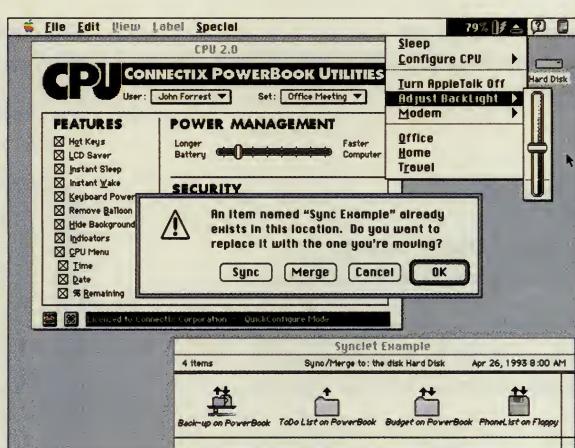
By Raines Cohen and Henry Norr

San Mateo, Calif. — Connectix Corp. this month released Connectix PowerBook Utilities 2.0, an upgrade to its \$99 package of PowerBook utilities.

"I can't think of anything they could have put in but didn't, yet it's infinitely more accessible and easier to use," said Jonathan Crawford, a San Francisco management consultant and CPU 2.0 beta tester. "Now when I move from my office, where I don't care about power usage or security or audio volume, into the field, where those things are critical, it makes the adjustments I want automatically."

Enhancements include:

► **Power management.** Version 2.0 adds control of processor clock speed and more accurately estimates remaining battery life, according to the company.



Connectix's CPU 2.0 includes synchronization functions, enhanced power management and a simplified interface.

► **Interface.** The CPU control panel now lets users adjust all power-management settings with a single slide bar; expert users who want finer control can still go to the separate settings screens used in Version 1.0.

► **Synchronization.** A new system extension modifies Finder dialog boxes to add a "Merge" option, enabling users to synchronize folders on different systems. Users can also save synchronization sets that run at start-up or on command.

► **Network identification.** CPU 2.0 can determine if a user is at a known location and adjust printer and other settings accordingly.

Upgrades are \$19 or, until June 30, free to users who purchased CPU 1.0 after Jan. 1. Users of other PowerBook utility collections can switch to CPU 2.0 for \$19.

Connectix Corp. is at 2655 Campus Drive, San Mateo, Calif. 94403. Phone (415) 571-5100; fax (415) 571-5195. □

AppleLink adds news, encyclopedia services

By Nathalie Welch

Cupertino, Calif. — When AppleLink subscribers log on this week they will see the first of many new services Apple will offer under its plan to turn the on-line service into a major source of revenue.

These services include the Dow Jones News Service, news briefs from USA Today and a searchable database of Groliers Encyclopedia. Feature articles, market news and weekly TV listings from Tribune Media Services are now provided, and Reuters is offering headline news and sports.

Ramping up for prospective users of Apple's future mobile-computing products, AppleLink now includes a Mobile Systems discussion area, a weather service, and a travel area to provide users with travel itineraries and lists of events in selected locations.

ZiffNet Selections for AppleLink will also debut this week. The new area offers news, product reviews and

downloadable software from MacWEEK and other Ziff-Davis Publishing Co. publications, including MacUser and PC Week. Unlike ZiffNet on CompuServe Information Service's network, however, the AppleLink area will not include two-way messaging forums.

Although AppleLink is the most expensive on-line service, Apple said it has no immediate plans to revamp its pricing. Current rates are \$37 per daytime hour for 9,600-bps access, and \$12 per daytime hour plus about 5 cents per kilocharacter for 2,400-bps access.

"Over time we will be restructuring pricing to make it simpler and to reflect the value of the information subscribers will be receiving," said Peter Friedman, director of Apple Online Services. Friedman said future AppleLink offerings will be based on more of a cable-TV approach, with subscribers paying to gain

access to just the services they want.

Apple has awarded Stratus Computer Inc. of Marlboro, Mass., a contract to supply its Napa, Calif.-based data center with hardware needed to host future enhanced versions. AppleLink now runs on a General Electric Information Services network.

AppleLink Account Administration is at P.O. Box 10600, Herndon, Va. 22070-0600. Phone (408) 974-3309; fax (703) 318-6701. □

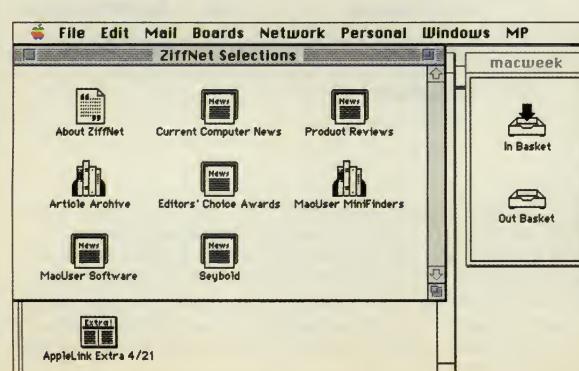
'040 accelerator ships

Flowery Branch, Ga. — DayStar Digital Inc. this week started shipping what it said is the first 40-MHz 68040-based Mac accelerator.

The 40-MHz Turbo 040, now available in limited quantities at \$2,399, currently fits the processor direct slots of the Mac IIci and IISi; the company said it will add compatibility with the SE/30, II, IIx, IIcx, IIvi, IIvx and Performa 600 machines this spring. The card includes FastCache Turbo, a 128-Kbyte secondary cache that lists separately for \$199.

DayStar said it expects the price of the card to decline as the still-scarce 40-MHz CPUs become more available over the course of the year.

DayStar Digital Inc. is at 5556 Atlanta Highway, Flowery Branch, Ga. 30542. Phone (404) 967-2077 or (800) 962-2077; fax (404) 967-3018. □



AppleLink now features ZiffNet Selections, which includes stories and software from MacUser, PC WEEK and other Ziff publications.

News

BRIEFS

Dayna utility gives users access to NetWare servers

Salt Lake City, Utah — Dayna Communications Inc. last week shipped a new version of its DOS-mounting utility that gives users access to Novell NetWare servers.

The \$99.95 DOS Mounter Plus includes Dayna's NetMounter utility, which give Macs the ability to access NetWare servers by simply clicking a button in the control panel (see MacWEEK, Jan. 11). In addition, DOS Mounter Plus adds support magneto-optical drives and features a new graphical user interface.

Users of DOS Mounter or other DOS disk-mounting utilities for the Mac can upgrade to DOS Mounter Plus for \$24.95.

Dayna Communications Inc. is at Sorenson Research Park, 849 Levoy Drive, Salt Lake City, Utah 84123. Phone (801) 269-7394; fax (801) 269-7363.

Likewise bug fix corrects Ethernet driver problems

Campbell, Calif. — Mac users should find it easier to do Likewise now that Apple shipped a bug fix for the software-distribution tool.

The \$129 package, originally developed for use in educational settings, consists of client and administrator applications that update users' software across LocalTalk and Ethernet networks.

The original release was marred by a variety of bugs and compatibility problems, particularly with System 7.1, some Ethernet drivers, and selected file types on client computers. The company said those problems have now been fixed. Likewise is available from Apple resellers or by calling Apple at (800) 950-2442.

Suitcase 2.1.3 fixes bug that caused crashes

Baton Rouge, La. — Fifth Generation Systems Inc. this month updated its Suitcase font- and desk accessory-access utility to Version 2.1.3. The new version contains no new features, only a few minor bug fixes, according to the company.

The upgrade fixes a bug that could cause crashes when both System 7.1's enabler mechanism and Adobe Systems Inc.'s Adobe Type Manager are present when Suitcase loads.

The new version also better detects font conflicts at start-up when the user is running System 7.1, which lets users split a font family among multiple font suitcase files.

Fifth Generation also took a step into the future by making Suitcase compatible with Apple's upcoming AOCE (Apple Open Collaboration Environment), so developers and testers of that package don't have to stop using Suitcase.

An update application for the new version is available on a number of on-line services and directly from the company.

Fifth Generation Systems Inc. is at 10049 N. Reiger Road, Baton Rouge, La. 70809. Phone (504) 291-7221; fax (504) 295-3268.



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THE BOTTOM LINE

The HP ScanJet IIc sets a new standard for affordable color scanners. Its engine is fast and well-engineered, and HP's innovative color-calibration software makes hassle-free, "true"-color scans a reality. Prices at less than \$2,000, the HP ScanJet IIc is a best buy in its class.

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and black-and-white photos, the ScanJet IIp is an exceptional product. The scanner is just 16 inches long by 10 inches wide.

TOP-NOTCH HARDWARE TEAMED WITH INNOVATIVE SOFTWARE MAKES HP'S NEW COLOR SCANNER A WINNER.



The HP ScanJet IIc uses a one-pass scanning method that makes it one of the fastest color scanners we've seen. It also provides time-saving color previews that dynamically display any changes you make to the scan, such as exposure, hue, and saturation modification.

"We were extremely impressed..."

We'd hate to brag. So we'll let the Mac press do it for us.

Macworld awarded both the HP ScanJet IIc and IIp their *World Class Award*, and named the HP ScanJet IIc as the *Best Color Scanner* for 1992, and the HP ScanJet IIp as the *Best Black & White/Gray-Scale Scanner*. While MacWeek gave their prestigious *Diamond Award* to the HP ScanJet IIc.

Speed. Simplicity. And accuracy were all applauded. It's no wonder. HP's single-pass scanning delivers both lightning-fast speed and precise color registration. TWAIN support allows scanning without having to switch between applications. And HP AccuPage technology with 400-dpi resolution can tackle the toughest OCR challenges. What's more, capabilities this advanced have never been this affordable. List price on the HP ScanJet IIc is just

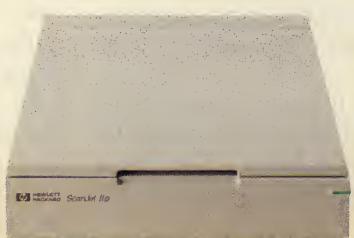
\$1,599. The HP ScanJet IIp is just \$879. And right now, the HP ScanJet IIc includes Adobe™ Photoshop LE.

Impressed? Don't just take our word for it, or even the Mac press's. Attend one of our scanning seminars that will be held April through September, 1993. To find out more about the HP ScanJet IIc and IIp or seminars in your area, call 1-800-SCANJET, Ext. 7364*. And judge for yourself.

HP ScanJet IIc



HP ScanJet IIp



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Alysis' eDisk compresses data as it is written to disk

Company's third entry works at driver level

By Robert Hess

San Francisco — Alysis Software Corp. this week will toss its hat into the driver-level compression utility ring.

The company said it expects to ship this week eDisk, a \$149.95 data-compression software package that compresses all data written to a user's hard disk and decompresses it when it is read from the disk.

File-level compression programs, including Alysis' own SuperDisk! and More Disk Space, compress individual files. eDisk, on the other hand, compresses all data as it is written to disk.

Alysis joins Golden Triangle Computers Inc., which shipped TimesTwo last year, and Stac Electronics Inc., which promises to ship Stacker for Macintosh this spring, in offering driver-level compressors.

Unlike TimesTwo, but like Stacker, eDisk does not replace the hard disk's own SCSI driver. Instead, eDisk compresses data as it is transferred from the Mac's file manager to the disk's SCSI driver.

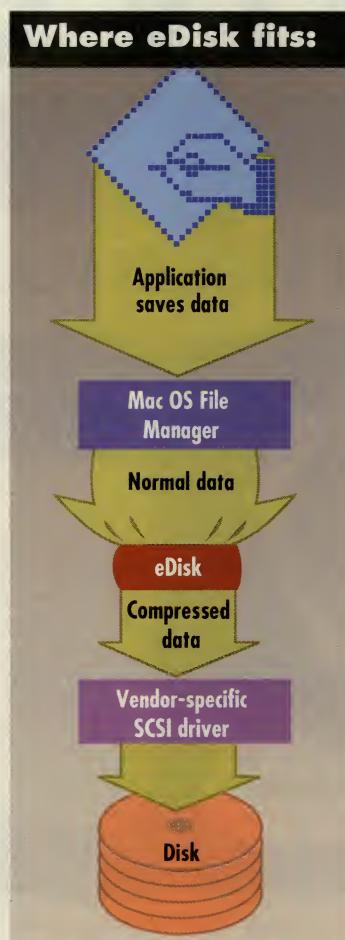
This gives users the ability to choose any SCSI driver they wish and to take advantage of their drivers' special features, such as partitioning, mirroring and error detection.

Like its driver-level competitors, eDisk avoids the usual block-allocation limits in the Mac's hierarchical file system to better utilize the space on a disk. Ordinarily, the system divides large hard disks into relatively large minimum-size blocks. When a file smaller than a disk's block size is written to disk, the unused space in the block is unavailable to other files and effectively lost. Alysis said eDisk customizes block allocation to suit each file's needs, further enlarging effective disk capacity.

eDisk's installer lets users choose among several compression ratios: 2-, 3- or 4-to-1. The higher compression rates slow performance and depend on the type of data being compressed.

eDisk comes with a built-in disk optimizer. Users can configure it to begin working automatically after a preset period of inactivity or manually run it through the eDisk installer.

Volume licenses are priced at



\$67.50 per copy for three to 100 copies, \$60 per copy for 101 to 499 copies and \$49.50 per copy for larger quantities.

Alysis Software Inc. is at 1231 31st Ave., San Francisco, Calif. 94122. Phone (415) 566-2263; fax (415) 566-9692. □

ABSI-Docs helps workgroups manage documents

By Kirsten L. Parkinson

Minneapolis — Antley Business Systems Inc. this month released a \$5,495 program designed to help users manage documents and projects shared in workgroups.

ABSI-Docs, a client-server system running a Helix Express database on a dedicated Mac, combines document-management, work-flow and project-tracking capabilities.

Features of ABSI-Docs include:

► **Document management.** ABSI-Docs stores documents on the server and downloads a specific file to a user's machine when selected. Compressed documents are

decompressed on the fly as they are downloaded.

Users can make changes and then return a new copy on the server. The program automatically records how long the user spent on the document and saves revised versions in an archive.

► **Work-flow management.** Managers can assign tasks to users, and the assignment will automatically appear on the user's to-do list with any notes. When users have finished their portion of the task, they can forward it to another user.

Antley Business Systems said it will also customize the program to

create automatic routes for projects, allowing managers rather than users to determine where each document should be routed after a user has worked on it.

► **Project tracking.** ABSI-Docs records who has any particular document, who has already worked on it and how much time has been spent on it. The program includes several report forms. Users can export project data to other programs in ASCII text, or SYLK or DIF (Data Interchange Format) formats.

Other features of ABSI-Docs include electronic mail, individual calendars for each user and four levels of password protection. A mail merge capability lets users create quick documents using a database of boilerplate text.

ABSI-Docs' price does not include the Helix multi-user database, which costs about \$150 per user.

Antley Business Systems Inc. is at 5217 Wayzata Blvd., Suite 213, Minneapolis, Minn. 55416. Phone (612) 542-9651; fax (612) 542-9665. □



ABSI-Docs provides a document-management system allowing users to electronically route files to other users on the network.

MicroNet brings Raven disk arrays to Quadra 800, adds Bernoulli 150

By Henry Norr

Irvine, Calif. — The Raven this month alighted on Apple's latest high-end Mac.

MicroNet Technology Inc. is now shipping its Raven disk arrays in seven capacities for the new Quadra 800. The Raven-800 systems consist of a matched pair of external drives, one connected to the Quadra 800's single built-in SCSI port, the other to MicroNet's new high-speed SCSI host adapter, the NuPORT-III. They offer sustained data transfer rates of up to 9.2 Mbytes per second and access times of as little as 4 milliseconds, according to the company.

Raven-800 configurations range from the Q8e/e-1030R, with a total capacity of 1 Gbyte and a suggested retail price of \$4,090, to the Q8e/e-5560R, a \$14,490 array with a capacity of 5.56 Gbytes.

MicroNet also added Iomega Corp.'s Bernoulli MultiDisk 150 to its line of removable-media storage systems. The external MicroNet

SBS-B150 lists for \$1,245, including one 150-Mbyte cartridge; additional cartridges are available from MicroNet at \$245 each, \$665 for a three-pack and \$799 for a five-pack.

In addition, the company said it has begun shipping the Archive DiamondBack, a digital audio tape drive and auto-loader (see MacWEEK, Jan. 4). The full-height external unit, now priced at \$6,495, is based on the new Archive Turbo Python mechanism, which has built-in compression. The standard version can hold four DAT cassettes, but the capacity can be increased to 12 cassettes with an optional magazine priced at \$295.

The auto-loader ships with four 90-meter tapes and Dantz Development Corp.'s Retrospect Remote 2.0, including a copy of the Retrospect application and three network clients.

MicroNet Technology Inc. is at 20 Mason, Irvine, Calif. 92718. Phone (714) 837-6033; fax (714) 837-1164. □

Rosanne package set to script Mac data-processing functions

Six utils clean data, translate formats

By Raines Cohen

Washington — A set of Mac utilities that allows scriptable batch processing of large data files such as mailing lists and transaction files is due next month from publisher Main Event.

Called Rosanne, the package consists of six utilities that can clean data, convert formats and prepare data for loading into another program. As they work, the utilities can generate subsets of selected records, count records by category and perform other analytical operations.

All the programs operate on plain-text files and route output to a separate file so the original data remains untouched. The record structure is stored separately from the files so any disk-based text editor can be used to inspect and adjust the data.

The company said Rosanne handles most standard mainframe data types, including character text, display integers, binary integers, display real numbers, single- and double-precision real numbers, and packed decimal numbers.

For the record

A chart listing SCSI Ethernet adapters in the April 19 issue omitted information regarding Focus Enhancements Inc.'s devices. Focus' EtherLAN SC supports thick media in addition to the thin mentioned, while the EtherLAN SC-T supports 10BASE T in addition to thin net.

OUR NEW POWERBOOK MODEM LEAVES GLOBAL VILLAGE SPEECHLESS.

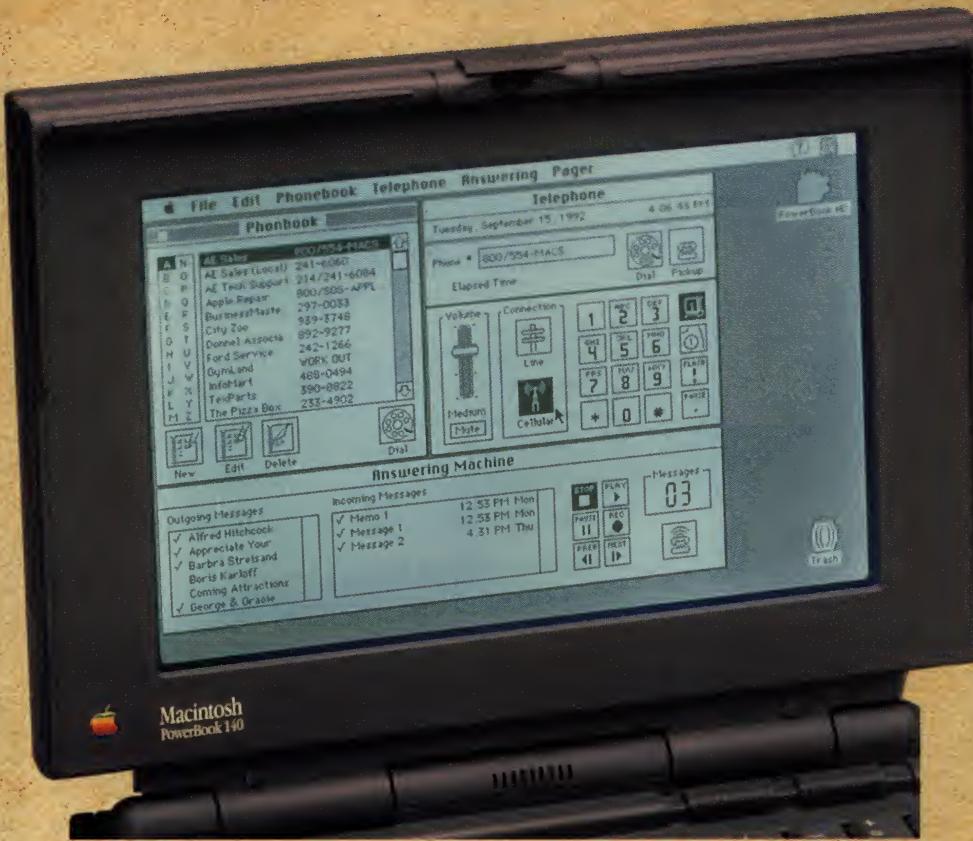
Stop! Don't do it!
Don't buy an everyday modem when for a few dollars more, you can get the one that turns your PowerBook into a complete communications center.

Applied Engineering's DataLink PB™ lets you send and receive data and faxes, just like Global Village's PowerBook modem. But only the DataLink gives you a powerful competitive edge where you *really* do business: on the telephone.

When you're making calls, your PowerBook becomes a turbo telephone/speakerphone. Right on the screen is your personalized phone number listing with quick dial and a point-and-click keypad. You can take online notes or check files and records as you talk.

Your PowerBook will identify callers as calls come in,* and keep complete records of all your calls. *It's like having a personal secretary right in your PowerBook.*

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DATALINK PB™ : THE FIRST AND ONLY POWERBOOK™ MODEM THAT HANDLES DATA, FAX AND TWO-WAY VOICE COMMUNICATIONS!

	14,400 S/R Fax & Data	MNP 10 Error Control	Standard Phone & Speaker Phone	Electronic Voice & Fax Phone Dialer	Digital Answering Machine	Voice Messaging	Voice & Fax Activity Log	Personal Note Taker
Applied Engineering DataLink PB	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Global Village PowerPort Gold	No	No	No	No	No	No	No	No



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And the all-in-one dashboard screen makes everything as easy as "point and click."

You'll enjoy other state-of-the-art features too. Like a superfast 14,400 bps transmission speed. MNP-10 for trouble-free transmissions. AppleTalk Remote Access compatibility. And FAXstf software, for special fax features like group and time-delayed faxing.

Plug in our optional Axcell™ Portable Cellular Interface and a cellular phone, and your communications center works *anywhere*. Taking messages in the next room while you visit with a client, sending

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Apple and a higher standard

Introducing the LaserWriter® Pro 600 and 630 printers from Apple.

Never before have workgroup printers this affordable produced this level of output.

Offering you true 600-dot-per-inch resolution, they deliver more than four times



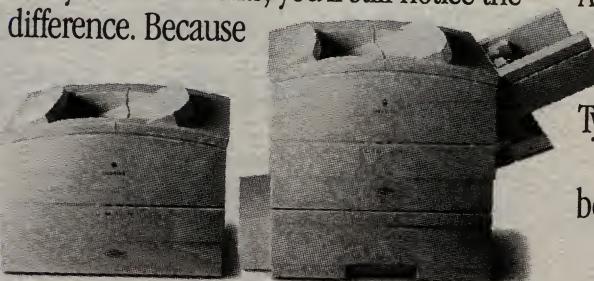
The LaserWriter Pro 600 and 630 feature PhotoGrade, an Apple breakthrough allowing you to print up to 91 levels of gray—that's 35% more grays than with our award-winning LaserWriter IIg.

A process that intelligently adjusts the size and position of every dot in relation to neighboring dots, allowing you to print up to 91 levels of gray at 300 dpi.

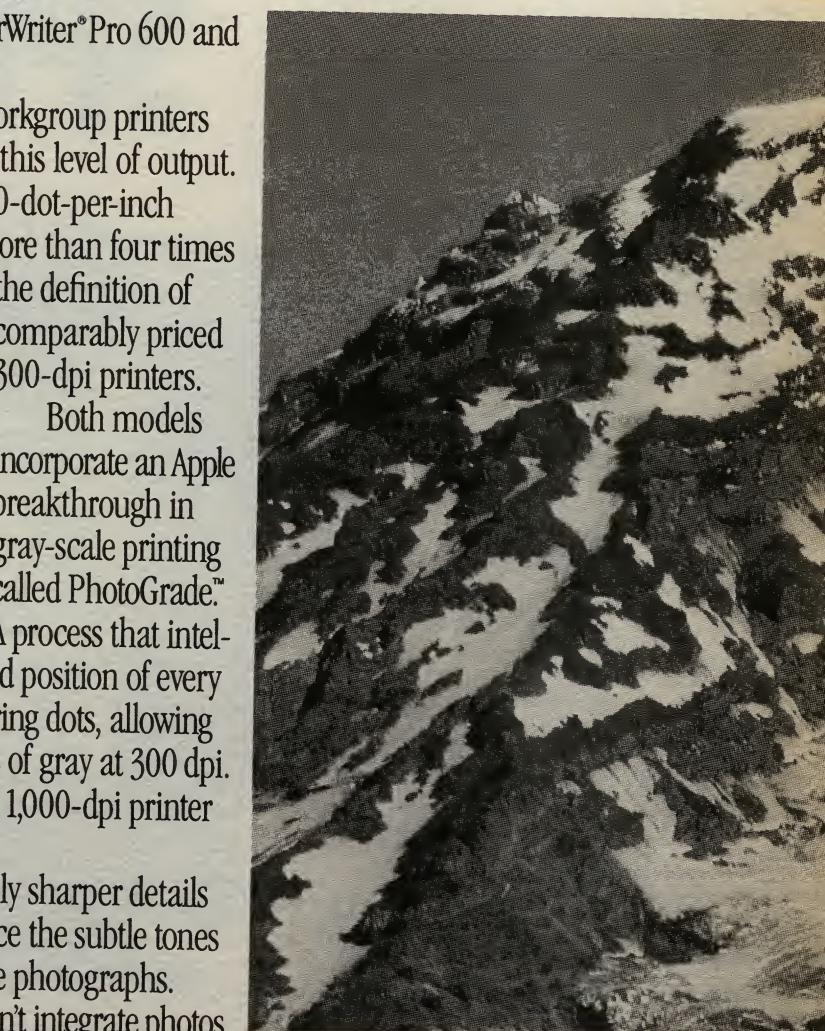
That's equivalent to a 1,000-dpi printer costing mountains more.

The result is noticeably sharper details and the ability to reproduce the subtle tones of gray in black-and-white photographs.

But even when you don't integrate photos into your documents, you'll still notice the difference. Because



Both LaserWriter Pro models come with two paper trays and a host of paper-handling options, including a 500-sheet feeder and a 75-envelope feeder.



Apple's FinePrint™ technology gives your text and line art cleaner edges and smoother curves. So your TrueType™ and PostScript™ Type One fonts have never had more impact.

Any way you look at it, your work looks better coming out of a LaserWriter Pro.

Two paper trays come standard, along with an array of options including a 500-sheet feeder and a 75-envelope feeder for a total paper-handling capacity of 850 sheets.

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nounces of laser printing.



You can also select and switch paper trays right from your computer and print a letter, complete with second sheet and envelope, without ever leaving your desk.

No other printer in the industry allows you to do so much so easily for so little.

For high-performance networks, the 630 features built-in Ethernet. So you'll be

able to move even the largest, most complicated image files and print them at speeds rivaling any RISC-based printer.

And if you happen to work in a mixed environment, both LaserWriter Pro models fit right in. They support PCL page description language and can easily accept jobs from Macintosh® and Windows-equipped computers simultaneously.

They also provide you with something that no other printer in the world can: Apple's renowned plug-and-play simplicity.

LaserWriter Pro 630 vs. HP LaserJet 4M

Gray levels:	91	51
Macintosh fonts:	64 TrueType 35 PostScript	None 35 PostScript
PPM:	8	8
Ethernet:	Built in	Optional
RAM:	8MB	6MB

In fact, Apple® LaserWriter printers were recently ranked highest in Overall Laser Printer Customer Satisfaction by J.D. Power and Associates.* Outranking Hewlett-Packard.

To see why, visit your authorized Apple reseller for a full demonstration.

You'll find that the LaserWriter Pro has the power to elevate your work to a level ordinary printers can only aspire to.

The power not just to look your best. The power to be your best.

The new LaserWriter Pro series from Apple.

are trademarks of Apple Computer, Inc. Adobe, PostScript and the PostScript logo are trademarks of Adobe Systems Incorporated, which may be registered in certain jurisdictions. Hewlett-Packard, LaserJet and PCL among 1,707 business end users at 848 business sites. *Manufacturer's suggested retail price. Actual output size 8 1/2" x 11". This ad was created using Macintosh personal computers and Apple LaserWriter printers.

Focus jumps into accelerator race

By Raines Cohen

Woburn, Mass. — Focus Enhancements Inc. last week announced a line of Mac accelerator cards that include SIMM slots for memory expansion.

The company is offering the Focus TurboCards for the Mac Classic, SE and

LC II as well as NuBus-equipped systems.

The Mac SE and Classic cards include either 25- or 40-MHz 68030 processors and support an optional \$50 FPU (floating-point unit). Both allow users to add up to 16 Mbytes of 80-nanosecond SIMMs, using old-style 30-pin SIMMs.

The Mac LC and NuBus accelerator cards include a 25-MHz 68040, or for the NuBus card, a 33-MHz option. The processor direct slot LC card does not include any additional SIMM slots, unlike the other cards.

Prices range from \$439.99 to \$1,899, depending on configuration. For instance, a 25-MHz '030 card for the Mac SE or Classic is priced at \$439.99; an '040-based NuBus card is priced at \$1,499 in a 25-MHz version and \$1,899 in a 33-MHz version.

Focus said it is manufacturing the cards itself, not reselling another company's products. The company is best known for its line of networking products, such as EtherTalk network-interface cards and hubs and AppleTalk Remote Access servers, but it is expanding its line to include a full range of Mac add-ons and peripherals.

Focus Enhancements Inc. is at 800 W. Cummings Park, Suite 4500, Woburn, Mass. 01801. Phone (617) 938-8088 or (800) 538-8866; fax (617) 938-7741. □

Media Vision bundles CD drive, speakers

By Kirsten L. Parkinson

Fremont, Calif. — Media Vision Technology Inc. this month released a multimedia package for the Mac that bundles a CD-ROM drive, speakers and CD titles.

The \$899 CD-ROM Multimedia Kit includes a Sony drive offering an average access time of 295 milliseconds and a data transfer rate of 300 Kbytes per second.

The bundle also comes with a speaker system from Labtec Enterprises and FWB Inc.'s CD-ROM ToolKit, which provides drivers and caching capabilities for the drive (see MacWEEK, April 12).

Three CD titles, Compton's Multimedia Encyclopedia from Compton's NewMedia Inc. and Interplay Productions' Battle Chess and Out of This World, are included in the package.

Media Vision this month also introduced its Captain Crunch technology, allowing users to perform real-time video compression and decompression on their IBM PCs and compatibles. The technology, which will be available to developers this quarter, will support video playback on a Mac IIci or more powerful CPU as well as on PCs.

Media Vision Technology Inc. is at 3185 Laurelview Court, Fremont, Calif. 94538. Phone (510) 770-8600 or (800) 348-7116; fax (510) 770-9592. □

Compaq cuts price on 20-ppm printer

Houston — Compaq Computer Corp. this month rolled back prices 16 percent on the Pagemarq 20, the company's 20-page-per-minute laser printer.

Although it declined to provide list pricing, Compaq said the printer is now available for a street price of about \$3,599. The company also said it has cut the street prices of options such as memory upgrades and LocalTalk and other network interface cards by up to one-third.

Compaq last month cut the cost of the 15-ppm Pagemarq 15 by a similar margin, to a street price of about \$2,599.

Both printers handle pages up to tabloid size and have a resolution of 800 by 400 dpi. The Adobe PostScript Level 2 printers were the first to offer a PostScript fax option. Each includes an AMD 29000 RISC chip and can handle up to five simultaneously active interfaces.

Compaq Computer Corp. is at 20555 State Highway 249, Houston, Texas 77070. Phone (713) 370-0670; fax (713) 374-1740. □

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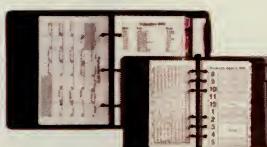
Step 2: Notice how incredibly easy Now Up-to-Date is to use. Totally customizable. 100% non-fascist. Just click on a date, enter your info, bang, you're done.

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Step 7: Quit goofing around reading software ads and get back to work. You've got a lot of stuff to do.

Now Software



Focus, Envisio, Mirror readying versions of SyQuest 3.5-inch drive

By Kirsten L. Parkinson

San Francisco — Riding the 3.5-inch SyQuest wave, three storage vendors next month will ship their versions of the new removable-media drive.

With a capacity of 105 Mbytes per cartridge, the drive mechanism offers an average access time of 14.5 milliseconds and a sustained data transfer rate of 1.7 Mbytes per second. All three vendors will include a cartridge with the drive.

► **Focus Enhancements Inc.** is preparing two models of the drive in a vertical configuration. The \$799.99 Focus 105R will include a single mechanism; the \$1,499 Focus 105R Duet will combine two of the drives in one enclosure.

The drives will be available directly from the company in black or platinum. They will ship with a collection of utilities from Datawatch Corp. and Golden Triangle Computers Inc., including Virex and Disk-Maker, respectively. Additional cartridges

will be \$79.99; a three-pack lists for \$229.99.

► **Envisio Inc.** will offer a \$999 model of the SyQuest drive as part of its SmartStack line of modular, stackable storage devices.

The SmartStack system lets users connect multiple SCSI devices in a vertical stack with a single cable and power supply.

Additional cartridges will list for \$119.

► **Mirror Technologies Inc.** will ship a \$699 external model of the 3.5-inch drive. It will come with a one-year warranty. Additional Mirror cartridges are \$99.

Focus Enhancements Inc. is at 800 W. Cummings Park, Suite 4500, Woburn, Mass. 01801. Phone (617) 938-8088; fax (617) 938-7741.

Envisio Inc. is at 2640 Patton Road, St. Paul, Minn. 55113. Phone (612) 628-6288; fax (612) 633-1083.

Mirror Technologies Inc. is at 2644 Patton Road, Roseville, Minn. 55113. Phone (612) 633-4450; fax (612) 633-3136. □

Toshiba wakes late-sleeping PowerBook drives

By Kirsten L. Parkinson

San Francisco — Is it safe to put a Toshiba 213-Mbyte drive in your Duo? The answer depends on whom you ask.

The Disk Products Division of Toshiba America Information Systems Inc. last month recalled some of its 2.5-inch, 213-Mbyte drives for the PowerBook, citing problems with the model's standby mode.

According to the Irvine, Calif.-based company, certain PowerBook models power the drive down to 3 volts instead of zero volts when putting it in standby mode. When the drive powers up again from 3 volts, it may not implement the proper reset function, the company said, making the drive fail to wake up.

Toshiba representatives said the problem has been corrected and that fixed drives have been shipping since last month. Fewer than 500 drives were affected by the problem, according to the company.

"Toshiba has been very, very forthright about the problem," said Paul McGraw, vice president of APS Technologies Inc., a storage vendor in Independence, Mo., that carries the drive. "It fixed the problem in an incredibly

short period of time."

Some users, however, said they have had difficulty replacing faulty drives because some Toshiba drives continue to have problems.

John Servais, owner of NorthWest House, a consulting firm in Bellingham, Wash., said he ordered two of the Toshiba drives but had to return one when it did not wake up after system sleep. He was unable to get a replacement drive from his regular distributor, however, because the company continued to receive faulty drives from Toshiba, he said.

Servais said he eventually turned to another reseller for a working drive, but his first try with that company produced another drive with the same problem.

"What's obvious is that there was a mess of bad drives going out there, and Toshiba was aware of it but wasn't doing what we expect it to do," he said. "It's causing a hell of a problem."

Servais said he is now on his third drive, and it seems to be working so far. "I hope I have a good drive, keeping in mind that it's still a Toshiba drive. It cost us \$150 more than the first one, but we don't care. We just want a drive that works." □

Hardware That Fits launches line of storage units

By Ian G. Jacobs

Conroe, Texas — Hardware That Fits last month introduced a new line of storage products, and to commemorate the occasion it is bundling Now Software Inc.'s Now Utilities with its drives through May.

The mail-order hardware reseller has marketed other vendors' drives in the past, but this is the first time it has offered storage devices under its own RealTech label.

The new series includes systems from a long list of vendors. Hard drive offerings range from a 40-Mbyte Maxtor internal drive priced at \$269 to a 3.6-Gbyte Micropolis external unit.

Removable-media options include SyQuest, Iomega, floptical and magneto-optical drives, and tape backup systems.

All drives will ship with System 7.0.1; RealTech Drive Utilities, a formatting, diagnostic and driver package based on Transoft Inc.'s SCSI Director; and a shareware collection.

Hardware That Fits provides toll-free technical support, a 30-day money-back guarantee, and repair or replacement of certain models of failed drives within 24 hours.

Hardware That Fits is at 610 S. Frazier, Conroe, Texas 77301. Phone (409) 760-2400 or (800) 364-3838; fax (409) 539-4141. □



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Apple unleashes Desktop Seminar Toolkit

CD-ROM simplifies multimedia authoring

By Henry Norr

Cupertino, Calif. — Apple USA's training department next month will ship a CD-ROM-based authoring system designed to take some of the hassle out of making fancy multimedia presentations.

Called Apple Desktop Seminar Toolkit, the \$299 package is aimed at trainers, teachers, consultants, sales reps and others who are not multimedia professionals but need to create attention-grabbing presentations or seminars in the program's terminology. Based on HyperCard, it provides templates where users can create an outline, enter text and organize additional elements, including graphics, audio and QuickTime movies.

Seminar developers can build in interactive exercises for end users, such as multiple-choice tests or matching games that involve dragging graphics. The disc includes a seminar on creating seminars, as well as a cost-estimation module.

Knowledge of HyperTalk scripting is not required; users can create their presentations entirely with



The Apple Desktop Seminar Toolkit, a CD-ROM-based multimedia authoring system originally developed for internal use at Apple, will be released next month.

menu commands and buttons, according to the company. Familiarity with QuickTime is recommended for users who wish to add video clips.

Stacy Vance, a Mac instructor at Liberty Mutual Insurance Co. of Portsmouth, N.H., evaluated a pre-release version of the disc and recommended it for producing computer-based training (CBT) materials. "It will be really nice for our CBT devel-

opment team," she said. "Our main focus is sales training, and this will let us do things such as create electronic study materials that include film clips of top-notch sales people in action."

The Apple Desktop Seminar Toolkit will be available through Apple resellers, the Apple Catalog and the Apple training group's distribution arm, which can be reached at (800) 950-2442. □

New IntelliTalk word processor can talk back to users

By Lisa Picarille

Richmond, Calif. — What do your mother, your spouse, your kids and IntelliTools Inc.'s IntelliTalk word processor have in common? They can all talk back to you.

Telepathic 2 speeds word prediction

By Ian G. Jacobs and Henry Norr

Edmonton, Alberta — Madenta Communications Inc. next week will ship a rewritten version of Telepathic, its word-prediction software. Version 2.0 features a more flexible interface, improved performance and new sound support.

The \$295 program can guess either the rest of a word being typed or the next word. Predicted words are selected from lists supplied with the package, supplemented by user-imported words and others the program learns by observing the user's writing. Predictions are ranked on the basis of frequency and context.

Users can define word lists for specific topics or languages, such as a list of biology-related words for use in lab reports. Multiple lists can be open at once.

With the new version the suggestion list, updated as the user types,

IntelliTools, previously called Unicorn Engineering, this month shipped a word processor that can read words, sentences and paragraphs aloud after they are typed.

Called IntelliTalk, the \$39.95

can be displayed in any font or size in a floating foreground palette; the user can select the desired word with the mouse or keyboard.

Word completion and next-word prediction are dramatically faster than in the original release, Madenta said. Other enhancements include audio playback of letters, words or lists; automatic abbreviation expansion or speaking; and support for single-byte foreign languages such as French and Spanish. Full support for WorldScript and AppleScript will be added soon, the company said.

Upgrades are \$50, or free to users who bought Version 1.0 in the past six months.

Magenta Communications Inc. is at Advanced Technology Centre, Suite 209, 9650 20th Ave., Edmonton, Alberta T6N 1G1, Canada. Phone (403) 450-8926 or (800) 661-8406; fax (403) 428-5376. □

program is aimed at disabled users, as well as very young students and those learning English. It lets users hear the words they entered to verify the text.

The program, which requires Apple's MacInTalk text-to-speech system extension, maintains a dictionary of pronunciation exceptions to more accurately pronounce words that sound different from the way they are spelled.

Users can add words to the exceptions table by entering the correct spelling of the word and then spelling the word phonetically.

IntelliTalk offers two interfaces. The Picture Menus mode, aimed at novice users, includes more than 200 symbols that graphically depict the function of each menu selection. Standard Menus gives users a more traditional Mac menu bar that offers more choices for manipulating type style and size.

The company also sells an Apple II version of the program, which requires an external speech synthesizer. Both are designed to work with the company's IntelliKeys keyboard.

IntelliTools Inc. is at 5221 Central Ave., Suite 205, Richmond, Calif. 94804. Phone (510) 528-0670; fax (510) 528-2225. □

News

BRIEFS

Cartesia ships disc of world maps

Lambertville, N.J. — Cartesia Software (formerly MicroMaps Software Inc.) last month shipped a CD-ROM version of its collection of detailed maps.

The \$299 MapArt World Data Bank contains maps of every country in Adobe Illustrator format. All maps reflect the upheavals and border shifts of the last few years, according to the company.

Users of the floppy disk version can upgrade for free to the disc. Cartesia also bundled all of its previous MapArt CD-ROM titles (see MacWEEK, Aug. 3, 1992). The \$379 MapArt Bundle contains volumes of the USA & International, US States, Global Perspectives Maps and Metro Areas CD-ROMs.

All maps in the bundle are in Encapsulated PostScript format. The CD-ROMs not sold in the bundle contain images in both Encapsulated PostScript and PICT formats and cost \$179.

Cartesia Software is at P.O. Box 757, Lambertville, N.J. 08530. Phone (609) 397-1611 or (800) 334-4291; fax (609) 397-5724.

Capital cuts price of debt-collection program

Greig, N.Y. — Capital Transactions this month released an update to its debt-collection program and cut the price in half.

The \$995 Total Collections 1.7, formerly \$1,995, presents on-screen scripts to help debt collectors make phone calls to debtors, providing suggested reactions to 10 common responses from debtors.

The HyperCard stack can dial work and home phone numbers and mail-merge addresses to send collection notices. Users can generate reports with the five included Microsoft Excel templates.

Total Collections can import data from Excel and ASCII text files. Users can sort and search records to track down debtors that owe on more than one account.

Capital Transactions is at Star Route 50, Greig, N.Y. 13345. Phone (315) 348-8551.

Education manuals aimed at corporate instructors

Columbia, Md. — Tectrix Inc. last month released a series of educational manuals aimed at the corporate instructor.

The company's guides, previously available only on a contract basis, cover basic Mac software, including WordPerfect and Microsoft Works. The company also offers manuals for several other classes of products.

Each manual is \$20. Site licenses are \$600, and volume discounts are available.

Tectrix Inc. is at 10320 Little Patuxent Parkway, Columbia, Md. 21044. Phone (410) 715-1300 or (800) 832-8749; fax (410) 715-1302.

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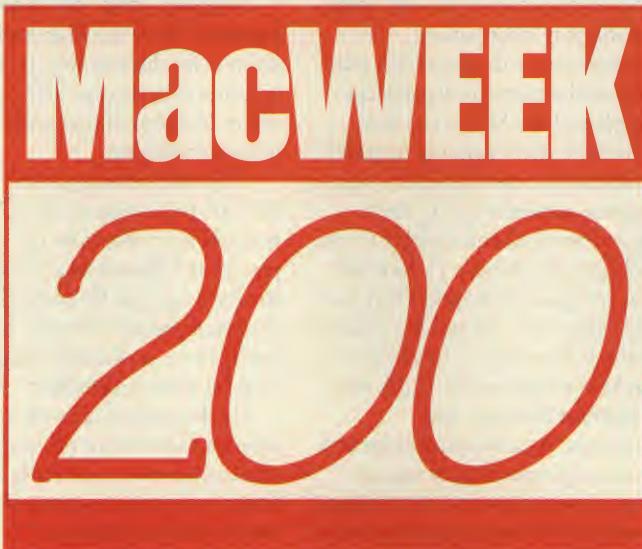


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Management

Rapidly growing start-up puts its Macs to the test

Running a small business from the Mac is not all plug and play.

By Mitch Ratcliffe

When Bill Rosenzweig left the world of high technology to start his tea company, he took his Macintoshes with him. Now he's wondering if the Mac is up to the bookkeeping and communications challenges he faces in a rapidly growing business.

The Republic of Tea Inc., Rosenzweig's specialty tea company based in San Rafael, Calif., opened its doors in January 1992. The first products, 26 different teas and herbs, shipped in May that year. Since then, the Republic's monthly orders have grown 1,500 percent, and the company may reach \$2 million in sales this year, more than a year ahead of schedule.

"I started this business in my basement with my Mac and a fax modem," Rosenzweig said as he poured several cups of the Republic's new Rainforest Tea. The former president of San Francisco-based Clement Mok Design, he bootstrapped the Republic using four of his own Macs. "You need to have an infrastructure in place that will accommodate your growth, and I'm not sure that we chose the right computers," he said.

The company, which he started with Banana Republic Inc. founders Mel and Patricia Ziegler, was launched with only three employees: Rosenzweig, an office manager and an assistant. The original business plan, published recently as part of a book about the company's founding, called for the hiring of two additional people after one year and recruitment of a controller after two years. Nine months into the Republic's life, it employed seven full-time workers and another half-dozen part-timers.

From the very beginning, the Republic has relied on computers to automate the simple, repetitive tasks that can take up large portions of an employee's day. "We will use technology to work smart," Rosenzweig wrote to the Zieglers during the planning stage of the start-up.

Every new employee must have basic computer skills, Rosenzweig said. He has acted as administrator for the Republic's electronic-mail system, QuickMail from CE Software Inc. of West Des Moines, Iowa, which each employee is required to use religiously. "E-mail must be read and responded to every day; communication is critical to our

success," he said. Macintoshes have eased some of the burden of training new hires; QuickMail introductions always go quickly, he said.

At the same time, technology has been a stumbling block in the implementation of the company's motto, which advises that life and work should be taken sip by sip rather than gulp by gulp.

"We have staff meetings about the zen of efficiency in movement, but one of the biggest wastes of time is all the waiting for the computer," Rosenzweig said. The Republic uses Database Accounting Library from SBT Accounting Systems Corp. of Sausalito, Calif., to track the accounts of 700 retail and catalog customers. "It can take an hour just to generate weekly reports."

IIsi or NetWare server?

Accounting software has been a particularly sticky point for the Republic. Its entire operation revolves around SBT's software, which is based on Microsoft Corp.'s FoxBASE+. The system, which until recently ran on a Mac IIci, tracks customer orders, an inventory that includes hundreds of teas and herbs, and shipping information.

Employees in the Republic's warehouse and accounting department complained that SBT is too slow.

An SBT client running on a IIci workstation in the Republic's warehouse is outperformed by the ancient Southall and Smith Ltd. tea packaging machine, a 15-foot-tall iron and glass contraption that uses brass weights to control the volume of teas in a package. The old tea machine works quickly and is easy to reset for different teas.

Generating a shipping order and invoice, by contrast, can take as long as five minutes and has delayed processing of customer orders until after the last Federal Express drop-off of the day.

A Novell NetWare server was recently installed. The SBT server was the first application migrated to the IBM PC clone.

"Performance has really improved," said Robert Lally, minister of the interior for the Republic. He manages the company's books and supervises the processing of orders. "Backing up the server used to take an hour. Now it takes five minutes," he said.

The improvement may be the result of changes in the server back-



JAMIE TANAKA

up configuration. Instead of backing up all 50 Mbytes of the company's files and applications to a digital audio tape drive, the NetWare server backs up only 30 Mbytes of accounting data.

"It's much faster than the Mac server," Lally said. He added that SBT printing and report generation is still too slow for the Republic, even after the switch to NetWare.

There's little chance the company will go with Intel clients exclusively in the near term, Lally said. "We've got so much tied up in this, it would be a \$50,000 decision to switch hardware and software. That's a decision we're not ready to make."

Graphics after all these years. Where the Mac really delivers for the Republic is in the graphics department. The company offers 26 different teas, each with unique packaging.

"The labels cost us about \$25,000 to develop vs. the \$250,000 it would have cost to do the same project at Clement Mok Design," Rosenzweig said. By doing the designs in-house "it wasn't hard to justify the cost of a color scanner or a 24-bit-color accelerator," he said.

The Republic shares after-hours time on a local color pre-press system to save money on trade-show booth and marketing materials and new product packaging.

"We're creating a movement, not just selling tea," said Gina Amador, minister of design. She said the company's unusual packaging — steel canisters with colorful, recycled paper labels — are

designed to convert customers to the experience of specialty tea. The packaging has a very personal appeal, the teas are given thought-provoking names (Sky Between the Branches is the name of one green tea), and collage images scanned into Adobe Photoshop provide a compelling dash of color.

The packaging did the work of

earning customer attention. Most specialty tea is shipped in bags. Full-leaf teas, such as those offered by the Republic and which are especially prized by tea drinkers, are not often packaged successfully.

"I've been carrying full-leaf estate teas for years, and these guys are doing great packaging," said Ari Weinzeig, a partner in Zingerman's Delicatessen in Ann Arbor, Mich. "You look at the design and presentation of information about the tea; the effort that went into it is apparent."

Amador used the Mac to design and lay out a catalog of teas and accessories, which the Republic has used as a capabilities brochure with retail outlets and as a direct-sales tool sent to individual mail-order customers.

"So far, the catalog has produced a 22 percent return," Rosenzweig said.

Producing test packaging has proved to be the Mac's other forte. Amador said that for only a few hours of work, the company can try out new tea ideas, packaging design and marketing concepts. As it prepares for its eventual move into mass-market retail outlets, such as grocery stores, it is experimenting with new package designs constantly.

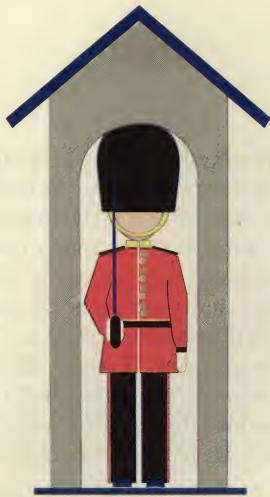
"When you're working in-house, no one pays for each comp, so you have to work cheap," Amador said.

Keeping up with change. Rosenzweig said the Republic is outgrowing its computers and software, often before the company can earn a return on its current technology investments.

Some of the problems the Republic is having with technology can be attributed to its lack of computer savvy. Rosenzweig said his 15-person business cannot afford a full-time technologist to keep up to date, and he cannot deliver the guidance he once could because the tea business is going so well.

See Tea, Page 16

Republic of Tea
staffers Robert
Lally, Gina
Amador, Luis
Ibarra and Suzy
Schuman are
shown above
with their colorful
Mac-designed
packages of tea.



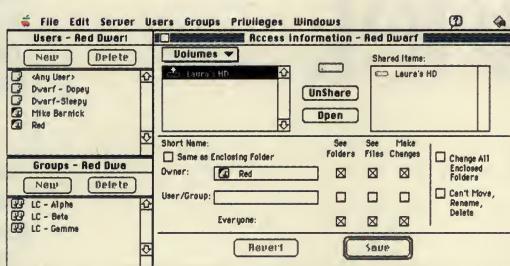
Server Sentry

AppleShare 3.0 Remote Management.

Server Sentry is the first and only Apple Events interface package to allow complete server management. Server Sentry can be used to remotely: control access to the server, get server log/statistics, provide alarms if problems occur, copy/manage users & groups between multiple servers, remotely launch/quit applications, remotely shutdown the server, and much more. All of these tasks are done from an interface which is identical to the familiar AppleShare 3.0 Admin. interface.

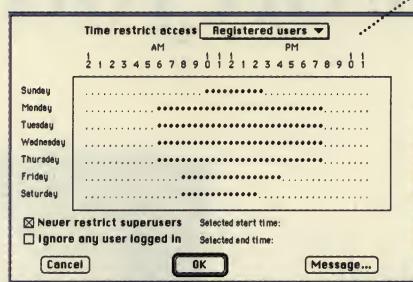
Use all AppleShare 3.0 Admin. features remotely.

Auto Disconnect Users.

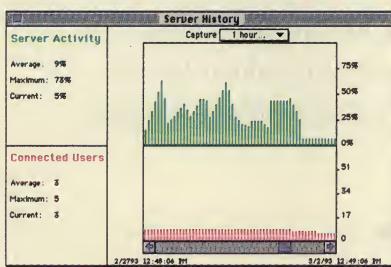


Guest to Macintosh Name Mapping.

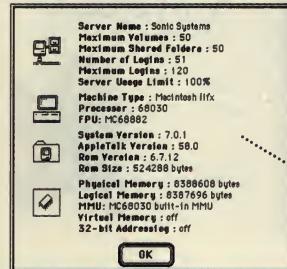
Time/User based Access Restriction to Server.



InterServer Management allows Users and Groups to be copied across multiple servers.



Server Alarms can be sent to Pager, Screen & Log.



Server Profile provides the hardware and software configuration of the server(s).

Server Usage Graph & Server Statistics Log (to determine who logged in/out and when).

Smart Copy allows folders to be copied across servers while maintaining ownership and access privileges.

	Server Sentry	AppleShare Admin
Remotely Manage Server(s)	✓	
Guest to name Mapping	✓	
Time/User based Access Restriction to Server	✓	
Server Alarms	✓	
InterServer Management	✓	
Smart Copy	✓	
Auto Disconnect Users	✓	

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Sonic Systems, Inc.

Tech

From Page 14

He travels at least a week a month, and on the afternoon that MacWEEK visited the company, he had four meetings. So, the Republic operates without the benefit of its chief technologist.

Despite his early commitment to using technology to leverage the skills of his employees, Rosenzweig said he cannot keep up with the changing computing market.

For example, the company ordered its NetWare server before it was aware that Apple would soon ship its new Apple Workgroup Servers.

"A company our size has to rely on consultants for advice," Lally said. "Bill just doesn't have time to deal with all this stuff; it really doesn't make sense that our CEO is also our QuickMail administrator, either."

Rosenzweig agreed. "I used to have a more in-depth comfort level with technology. I'm

so busy that we have to rely on outside consultants, and that's frustrating. We had a power outage the other day that crashed the NetWare server, and no one knew how to reboot it after the power came back on, including me."

Identifying the best consultant has been a key to the Republic's computing progress. Rosenzweig said the trait he looks for in consultants is personal involvement with the Republic's mission. "The safe ground is to

find a consultant who you can trust, which means they take an interest in the success of your business beyond billing you by the hour.

"I wanted the technology to be invisible. But it hasn't been because of the order-entry and inventory problems," Rosenzweig said late in the afternoon over a cup of Pi Lo Chun green tea. "Every small business needs to budget for consulting, but you also need something that can grow with your business. That's where the Mac has fallen down." □

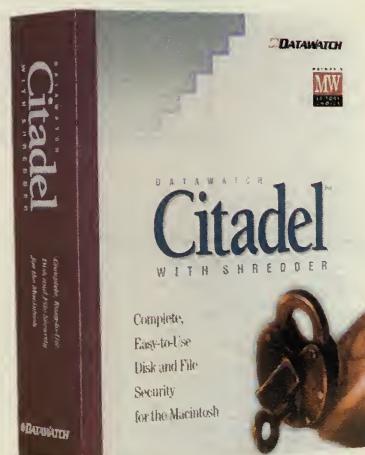
Security software that's tough on intruders. Not on you! Citadel.

Datawatch Citadel with Shredder™ is a Macworld Magazine Editors' Choice among security products because it's a complete, easy-to-use disk and file security solution.

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Citadel offers a full array of security features that let you protect your Mac and its data from unauthorized access. Citadel lets you lock hard drives, and lets you lock or completely disable floppy drives.

Citadel lets you encrypt individual files and folders, and its Shredder feature turns the Macintosh trash can into



a secure document shredder. Citadel also lets you lock the Mac screen after a pre-selected period of time to guard your system from browsers and tamperers.

Easy-to-Use

Though Citadel has all the security features you need, you

won't find it hard to set up or use. In fact, Macworld magazine called it "Feature packed; easy to use" (*Macworld*, 6/92), and chose it as its Editors' Choice among security products (*Macworld*, 2/93).

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Calendar of Events

APRIL

29-May 2: MCN International Consultants Conference, Peachtree City, Ga. Includes product reviews, presentations and interaction with developers. Contact the Macintosh Consultants Network at (209) 545-0569 or (800) 729-4626; fax (209) 545-0279.

MAY

3-5: Managing Apple Computers in Information Systems, San Antonio. Biannual conference of Mac managers' organization. Contact MacIS at (513) 398-7500; fax (513) 398-7503.

3-7: DB/Expo '93, San Francisco. Client-server and information technology solutions trade show and conference. Contact NDN Enterprises at (415) 966-8440 or (800) 232-3976; fax (415) 966-8934.

3-6: Interactive '93, Anaheim, Calif. Multimedia and computer-based training developers expo, as well as many discussion sessions. Contact Ziff Institute at (617) 252-5119; fax (617) 252-5222.

4-5: MacNorthwest '93, Portland, Ore. Regional Mac trade show plus conference on emerging technologies. Contact Chemeketa Community College Information Technology Group at (503) 399-6064; fax (503) 399-4898.

9-12: SUGI 18 Conference, New York. Statistical-analysis conference with special problem-solving booths to cover specific software snags. Contact SAS Institute Inc. at (919) 677-8000; fax (919) 677-8166.

9-13: Apple Worldwide Developers Conference, San Jose, Calif. Presentations on Mac and other Apple technologies and marketing techniques. Contact CMI at (415) 705-8050; fax (415) 291-0126.

11-13: Computer Storage Exposition and Conference, Anaheim, Calif. Storage security and PCMCIA will be discussed, and new technologies will be displayed. Contact Eberhard & Co. at (212) 486-6186; fax (212) 486-6481.

Please submit notices of conferences, trade shows and other Mac-related events to Calendar, MacWEEK, 301 Howard St., 15th Floor, San Francisco, Calif. 94105, or fax to (415) 243-3650. No training or educational seminars please.

After all the
thinking we put
into it, we still
can't say whether
it's a notebook
computer or a
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It's a stunningly practical idea — a single computer that gives you the best of both worlds.

The PowerBook Duo System has two parts: The sleek 4.2-pound PowerBook Duo, with all the features that have made PowerBook™ the country's best-selling notebook computer. And, for your desktop, a Duo Dock, which instantly turns your notebook into a powerful and fully expandable office computer.

But unlike any computer "docking station" you've ever seen, the Duo Dock is more than a mere mechanical device. Thanks to Apple PowerLatch™ technology, it has an intelligence all its own.

When you insert the PowerBook Duo, the Duo Dock gently pulls it in, making a perfect connection. Then it automatically sets up your printer, server and network connections and configures itself for your

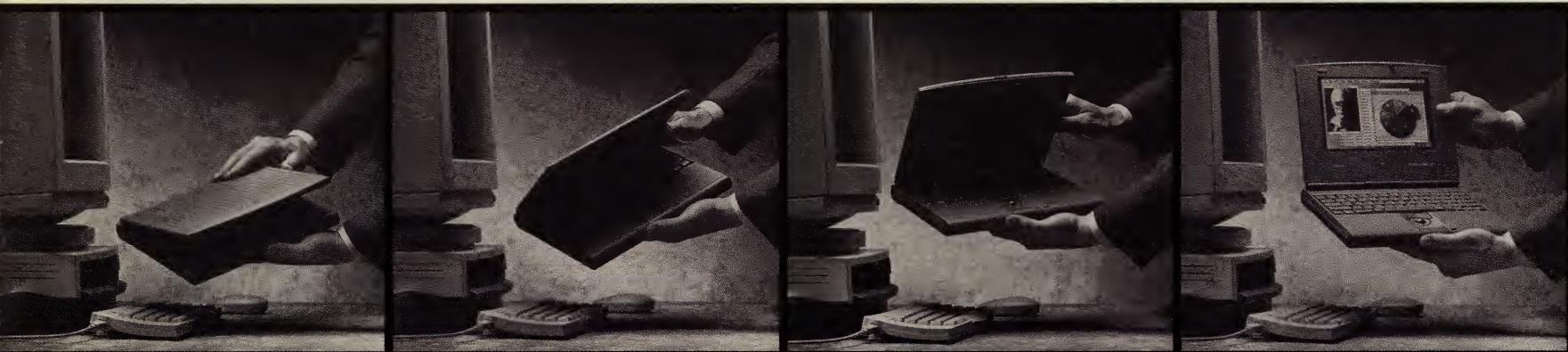
Configures itself. All you have to do is insert the PowerBook Duo — the Duo Dock makes the connection and sets itself up for your office resources.

No compromises. In the office, your sleek notebook turns into a complete desktop setup with a full-size keyboard and up to a 16-inch color display.

Thousands of programs. You can run over 5,000 Macintosh® applications. With the right software, you can even run MS-DOS and Windows programs.



best of both worlds. Get from one to the other.



No risk. If you try to eject the PowerBook Duo while you have unsaved files on-screen, you'll be reminded to save them first.

Easy connections. The office is always near. All you need is AppleTalk® Remote Access software and the optional high-speed data/fax Apple PowerBook Express Modem.

Expandable. The Duo Dock has two NuBus™ expansion slots (for such additions as 24-bit graphics and Ethernet) and ports for up to six peripherals.

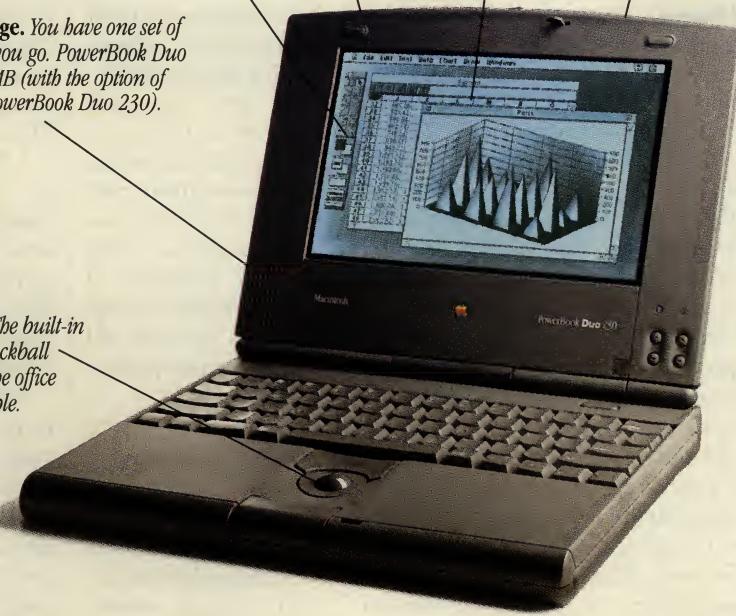
Plenty of storage. You have one set of files, wherever you go. PowerBook Duo stores up to 80MB (with the option of 120MB in the PowerBook Duo 230).

Flexible. Use the Duo Dock as a single shared setup for the entire sales force, a home office or a way to expand in the future. It fits almost any plan.

Award-winning design. The built-in palm rest and centered trackball make working outside of the office noticeably more comfortable.

Two models. The PowerBook Duo 210 and 230 both feature the Motorola 68030 processor, running at 25 MHz and 33 MHz, respectively.

Portable power. The PowerBook Duo is a full-featured computer with a grayscale super-twist display. It works up to 4.5 hours on a single battery charge.



color display and any peripheral devices that may be attached.

In fact, you can use your PowerBook Duo with different Duo Docks in different offices, and no matter where you decide to work, the system will automatically set itself up for your connected resources.

When you're ready to leave, you just press the eject button, and the Duo Dock releases the notebook, much like a VCR ejects a videocassette. (Unless you have unsaved files on the screen — in which case it has the good sense to point that out before you disconnect.)

To witness a truly intelligent display of technology, see the PowerBook Duo System at an authorized Apple reseller today. Call 800-732-3131, ext. 100, for the name of one near you. (In Canada, call 800-665-2775, ext. 910.)

You'll find that when you have the best of both worlds, all in one computer, you can enjoy the most satisfying kind of power. The power to be your best.®

The PowerBook Duo System from Apple



Gateways

► Networking
► Communications



Farallon turns up heat in Ethernet competition

By April Streeter

Alameda, Calif. — In a quest to regain a pre-eminent role in Macintosh networking, Farallon Computing Inc. last week filled in what it termed "the outstanding gaps" in its Ethernet product line.

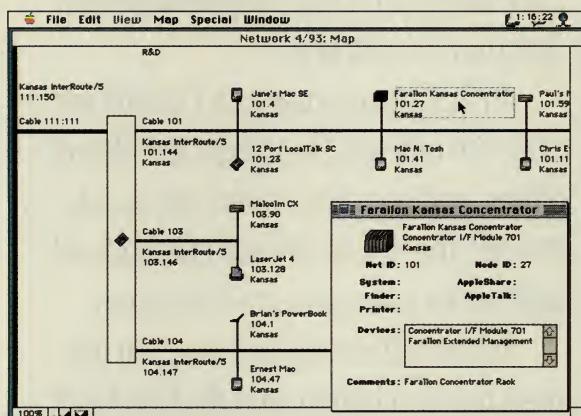
Farallon introduced an upgrade for its 10BASE T hub that provides in-band SNMP (Simple Network Management Protocol) data; a new version of its NetAtlas network-mapping

software; Ethernet transceivers; and a variety of Ethernet adapters, including external SCSI devices and cards for the latest Mac CPUs.

Farallon said this latest wave of Ethernet product introductions is part of the company's quest to retake ground lost to Asante Technologies Inc. and other vendors during Farallon's foray into non-networking areas such as multimedia.

See Farallon, Page 22

Version 2.0 of NetAtlas from Farallon allows users to choose a selected zone instead of a company's entire network.



Dayna rolls out 24-port Ethernet hub

EtherPrint also gets 2nd LocalTalk port

By Ian G. Jacobs and April Streeter

Salt Lake City — Dayna Communications Inc. this month shipped a 24-port Ethernet hub that gives small workgroups room to expand their networks.

The rack-mountable \$1,399 DaynaSTAR Hub-24 is bundled with Network Vital Signs, the company's \$449 network-management software. Dayna's \$995 12-port DaynaSTAR Hub-12 will no longer be sold.

The Hub-24 has 24 10BASE T ports and two other 10BASE T outlets for cascading additional hubs. Single BNC and AUI (attachment unit interface) connectors also let managers link the device to a thin- or thick-net backbone.

of excessive network traffic errors.

Marvin Price, systems manager at Motown Records in Hollywood, Calif., said the hub's automatic partitioning capability helped him hunt down a nagging problem.

"We have Macs doing sound editing, and our graphics department is using Quadras," he said. "But the LEDs helped me find out the problem [was] in a Duo Dock that was babbling to the network."

In other news, Dayna added a second LocalTalk port to its \$499 EtherPrint print server and cut the price of the four-port EtherPrint Plus and EtherPrint-T Plus to \$599, down from \$649. New software for both print servers, Version 2.0, includes a utility that lets managers name devices attached to the servers, place them in specific AppleTalk zones and apply password protection.

The software upgrade is \$99.

Dayna Communications Inc. is at Sorenson Research Park, 849 Levoy Drive, Salt Lake City, Utah 84123. Phone (801) 269-7394; fax (801) 269-7363. □

DCA to support products acquired in Avatar buyout

By Nathalie Welch

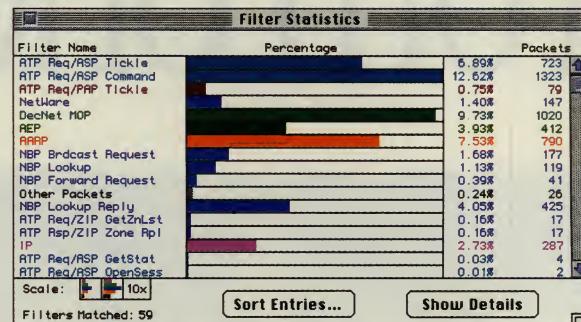
Alpharetta, Ga. — Users sometimes lose out when two similar companies join forces. But Digital Communications Associates Inc. last week announced an unusual effort to continue support for the Mac-to-IBM connectivity products it acquired through its buyout of rival Avatar Technologies Corp.

DCA last December gained ownership of Avatar's MacMainFrame Workstation, MainPrint print emulation product and Netway gateways/routers. The deal left some customers concerned about the future of these products.

Workstation. DCA last week said that come fall it plans to release an aggregate product, combining features of Avatar's MacMainFrame Workstation and DCA's Irma-Workstation for Mac, that will include support for all existing MacMainFrame interfaces and third-party applications. The product is expected to be called Irma-Workstation for Macintosh 4.0.

Before the combined product is released, users can expect a couple

See DCA, Page 22



EtherPeek 2.0, shown here, and LocalPeek 2.0 both include windows that graph the percentage of network traffic being captured in user-specified protocols.

EtherPeek, LocalPeek revisions offer more packet-sleuthing tools

By Leonard Heymann

Walnut Creek, Calif. — The AG Group Inc. last week shipped new versions of its EtherPeek and LocalPeek network-analysis tools that make it easier for users to detect and dissect wayward network packets.

Version 2.0 of both products adds new filtering mechanisms to isolate protocols during and after packet capture. The upgrades also offer a feature called "thread intelligence" that lets users zero in on specific network conversations.

Filters and triggers. LocalPeek includes 250 prefabricated filters for AppleTalk and MacTCP. EtherPeek ships 350 filters, adding decoders for Internet Protocol, Vines IP, DECnet and NetWare's IPX (Internetwork Packet Exchange), among others. Fil-

ters and triggers are stored outside the application so they do not use memory when not in use.

An unlimited number of filters and triggers can be set up for both products. The filters can be set to capture packets based on source and destination, protocol, offset, and error specifications. Filters can be created based on a particular type of packet and can be color-coded to help users identify packets that meet their criteria.

After capture, users can apply various combinations of filters successively — without reloading the buffer for each pass — using hide and unhide commands. Statistics can be updated after each operation. A Filter Statistics window displays the packets passing the filters as a percentage of overall traffic.

"The filtering architecture is much more coherent," said Dr. Steven Erde, director of academic computing at Cornell University Medical College in New York, where he beta tested EtherPeek 2.0. "EtherPeek is an order of magnitude better than Network General [Corp.'s] Sniffer," he said. The leading PC-based analyzer, the Sniffer is priced starting at \$15,500.

SmartDecoders. The analyzers can identify node-to-node sessions that are part of the overall stream of traffic by tracking requests and corresponding response packets. The program can also decode the session packets to the upper layers automatically.

Alerts from the analyzers can now be received via PagerPro from Caravelle Networks Corp., in addition to Notify! from Ex Machina Inc.

EtherPeek is \$795, while upgrades are \$120. LocalPeek is \$495; upgrades are \$75. Upgrades are free to users under warranty or service contracts.

The AG Group Inc. is at 254 Camino Diablo, Suite 202, Walnut Creek, Calif. 94596. Phone (510) 937-7900; fax (510) 937-2479. □

Apple stacks up MacTCP update

By April Streeter

Cupertino, Calif. — Apple this week is expected to ship a long-awaited upgrade to MacTCP, but users who aren't in the know won't be able to find it on the company's price lists.

MacTCP 2.0 is part of Apple's forthcoming TCP/IP Connection for Macintosh, which also includes an SNMP (Simple Network Management Protocol) client.

The upgraded MacTCP includes a control panel that can find and display lists of more than 400 zones without the slowdown of previous versions, a ping application that notifies administrators when a port cannot be contacted, and a feature that notifies users of Internet Protocol address conflicts.

TCP/IP Connection for Macintosh will be \$59 for a single-user version and \$499 for a 20-user pack. TCP/IP Administration for Macin-

tosh, a network manager version with additional configuration software and manuals, will be priced at \$499.

When Apple first announced TCP/IP Connection last October, it sent developers a contract addendum reserving the right to stop them from bundling MacTCP with their products starting six months after the general commercial availability of the stack. But Apple Product Manager Alistair Woodman last week said the company has no current plans to invoke the contract clause.

While that puts one controversy to rest for the moment, Apple has yet to resolve a dispute with InterCon Systems Corp. of Herndon, Va., over the product's name. InterCon sells TCP/Connect II, an application that offers a TCP/IP terminal, network news and electronic-mail services, and has threatened to sue Apple to prevent it from using the name TCP/IP Connection for Macintosh. □



Now that you have the new Apples, call the only company that can network the entire orchard.

Introducing new Ethernet solutions from the only complete Macintosh networking family. As Apple Computer releases

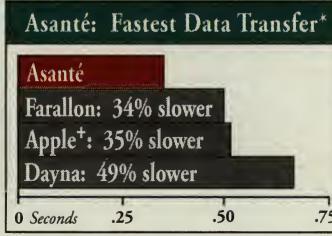
more and more Macs,[®] only Asanté[™] is keeping pace with Ethernet[®] solutions for all of them.

Introducing the MacCon+[™] LC III Ethernet adapter for the brand new

Macintosh[®] LC III and Color Classic. It's a high-performance card that plugs into the LC III's 32-bit expansion slot for simple Thin and 10BaseT Ethernet connectivity. This adapter is also backward compatible with earlier models in the LC family, and the Performa 400.

Only Asanté has an Ethernet adapter for every Apple.

The MacCon+ LC III is just the latest innovation from the only networking company with an Ethernet solution for every Apple CPU. Asanté's family tree includes the FriendlyNet[™] line of exter-



*32K file transfer between a Quadra 950 and Quadra 700. Source: Recommended Test Labs, Inc. 1993. Call Asanté for complete report.

nal adapters that connect Macs with built-in Ethernet, such as the Centris 610, 650, and the Quadra 800, to Thick, Thin and 10BaseT networks. We also offer the new Mini EN/SC, the smallest and lightest SCSI-to-Ethernet adapter in the world. It's the perfect space-saving networking solution for any Macintosh without available expansion slots, and was specifically designed for portable use with the PowerBook line.

So if you have Apples that are ripe for high-speed networking, and you want to get all your Ethernet solutions from a single source, call Asanté, the only company capable of networking the entire orchard, at 800.662.9686, extension 201.

Apple CPU	Asanté Solution
PowerBook 165c	Mini EN/SC
Mac LC III	MacCon+ LC III
Centris 610 & 650 Quadra 800	FriendlyNet Media Adapters

ASANTÉ[™]
ALL THE RIGHT CONNECTIONS[™]

Concorde Express makes WAN transfers fly

By April Streeter

Aptos, Calif.—Engage Communication Inc. last week shipped software that speeds up file transfers over wide-area connections or in Ethernet LANs.

Concorde Express, available for \$499, works with local- or wide-area Engage routers or in tandem with other connection software to

speed up file transfers between Ethernet Macs, Macs connected via leased lines or over satellite links.

The software dials through an Engage router to a receiving Mac and commandeers space on the hard drive for direct data transfer to a designated folder. It uses a streamlined error-correction protocol to bypass the Finder's typical

acknowledgment delays during file transfers.

Engage said receiving Macs don't need to be dedicated, but a user could experience slowdowns during a transfer.

In company benchmarks, Concorde Express boosted file transfer speeds over satellite links by about 100 times, since satellite relay delays are reduced significantly.

Transfers over leased lines, such as T1, achieved throughput of 1 Mbps, four to six times faster than standard file transfer rates.

Mac-to-Mac transfers in local Ethernets were also improved, according to Engage: Two Quadra 950s on Ethernet transferred a 1-Mbyte file at about 586 Kbps. When using Concorde Express, the transfer rate increased to 2.9 Mbps.

The company said it is working on a version of Concorde Express to work over modems and AppleTalk Remote Access connections.

Engage Communication Inc. is at 9053 Soquel Drive, Aptos, Calif. 95003. Phone (408) 688-1021; fax (408) 688-1421. □

IrmaWorkstation for Windows and IrmaWorkstation for DOS packages to the Netway 2000.

► **Network interface cards.** In the short term, Avatar's network interface cards netted in the acquisition will be supported, but plans to consolidate similar cards from both companies into redesigned offerings are in the works. The release of the redesigned card, with improved performance and combined functions, is likely to coincide with the release of the aggregate client software this fall.

► **Printer products.** For now, DCA will continue to market both Avatar's MainPrint CX and DCA's own IrmaPrint2, as is.

Digital Communications Associates Inc. is at 1000 Alderman Drive, Alpharetta, Ga. 30202. Phone (404) 442-4000; fax (404) 442-4368. □

DCA

From Page 20

of minor bug fixes and feature enhancements to both MacMainFrame Workstation and IrmaWorkstation for Mac products.

► **Gateways.** Avatar's MacMainFrame Gateway will be maintained and enhanced in its current form with no significant changes planned, according to Scott Schroeder, DCA marketing manager for Mac products.

The Netway 2000 communications gateway and LAN router that Avatar obtained via its acquisition of Tri-Data Systems Inc. in 1992 supports AppleTalk and IPX (Internet Packet Exchange) for departmental-level routing. Because of the product's somewhat limited client support on the DOS and Windows side, DCA will port the

and 650, and Performa 600 is \$189 for dual 10BASE T and thick-net media connectors or dual thick and thin connectors. A version with all three media will cost \$249.

A slightly tweaked EtherMac card for the LC III that also fits the Performa 400, 405, 430 and 450 will be \$189 for two-media versions and \$249 for a three-in-one version. With a math coprocessor, the price of the card rises to \$305 for the two-media versions and \$359 for three-in-one versions.

The cards will support Apple's implementation and are due next month, Farallon said.

The non-PowerBook SCSI adapters for either thin or 10BASE T Ethernet are \$339; versions that include the PowerBook HDI-30 SCSI cord are \$359. The SCSI adapters are available now.

► **Transceivers.** Farallon's transceivers will be available in versions to support standard Ethernet AUI (attachment unit interface) or Apple's own AUI connector. Farallon's EtherThin connects to thin-net networks and will ship in June, while Ether10-T transceivers work with 10BASE T and are available now. The transceivers cost \$85. Packages of 10 cost \$799.

Farallon Computing Inc. is at 2470 Mariner Square Loop, Alameda, Calif. 94501. Phone (510) 814-5100; fax (510) 814-5020. □

Farallon

From Page 20

"What this introduction means for us is we're through playing catch-up," said Steve Holtzman, Farallon vice president of marketing. "It would have been easier if we had gotten into [the Ethernet market] two years earlier, but we've now filled in with all the necessary network plumbing pieces."

► **Ether10-T StarController.** Farallon has changed the name of the StarController EN to Ether10-T StarController. Ether10-T supports 12 client nodes and has an extra port for connecting to an Ethernet backbone. Starting in June, network managers can upgrade the hub for \$200 to an Ether10-T StarController/557, which adds in-band management capabilities. With the in-band feature managers can use StarCommand Version 3.2 or any SNMP console program to manage the hub.

► **NetAtlas 2.0.** Available now, Version 2.0 of the \$695 NetAtlas lets users choose to map specific zones rather than entire networks. Information about network devices, such as routers, can be viewed by double-clicking icons on the map.

► **EtherMac adapters.** Farallon has rounded out its EtherMac line with adapters for Macs released in the past year. A 7-inch NuBus card that fits the Duo Dock, Centris 610

PacerForum 2.0 opens wider view of information to users, administrators

By Nathalie Welch

La Jolla, Calif.—Pacer Software Inc. this week is shipping PacerForum 2.0, an updated bulletin board system for AppleTalk LANs that lets users tailor their views of available conferences and information.

Version 2.0, available in a five-user pack for \$549 or a 25-user pack for \$1,995, provides users with a more detailed view of all forums available, including the number of topics each contains, the time and date of the last modification, and users' access rights to a specific forum.

"PacerForum is a workgroup BBS," said Andy Harris, president of Telemorphix Inc., an interactive TV production company in San Francisco. "It combines the ease of administration with an easy-to-use interface we require." Harris said PacerForum 2.0 serves his company well by communicating that the status of a project has moved to "urgent" without intervention from an administrator.

A more powerful pop-up notifier now displays a few lines of a response, and a double-click takes the user directly to the new topic or response. The new capability to post aliases will keep server disk space clear when users want to enclose references to large attachments, such as QuickTime files.

Administration improvements include a server usage log and the capability to add new users by importing a user file from another server. Administrators can now also modify user privileges in groups and create descriptive topic icons to aid users locating information on the server and organizing forums on their hard disks.

Customers who purchased PacerForum 1.0 before Jan. 1 can get a five-pack upgrade for \$109.95 or a 25-pack upgrade for \$399.95. Upgrades are \$14.95 for those who purchased Version 1.0 after that.

Pacer Software Inc. is at 7911 Herschel Ave., Suite 402, La Jolla, Calif. 92037. Phone (619) 454-0565; fax (619) 454-6267. □

The latest crop of fax modems

COMPANY	PRODUCT	BASE SPEEDS (BPS)	PRIMARY PROTOCOLS	BUNDLED SOFTWARE	PRICE	PHYSICAL FEATURES
BEST DATA PRODUCTS INC. 9304 Deering Ave. Chatsworth, Calif. 91311 (818) 773-9600	MacTraveler	2,400 data 9,600 send fax 4,800 receive fax	V.42bis, MNP 2-5	QuickLink II	\$199	2.75x5x1.25 inches
BOCA RESEARCH INC. 6413 Congress Ave. Boca Raton, Fla. 33487 (407) 997-6227	BocaModem	14,400 data, send-and-receive fax	V.32bis, V.17, V.42bis, MNP 5	FAXstf and QuickLink II	\$495	7.5x7.5x1.25 inches
DIGICOM SYSTEMS INC. 188 Topaz St. Milpitas, Calif. 95035 (408) 262-1277	ScoutPlus	14,400 data, send-and-receive fax	V.32bis, V.42, V.42bis, MNP 2-5, V.17	MicroPhone and FAXstf	\$389	32 ounces; 8.75x5.5x1.75 inches
DIGITAL DATA COMMUNICATIONS INC. 1300 Quince Orchard Blvd. Gaithersburg, Md. 20878 (301) 921-8600	Connection 96+	14,400 data	V.32bis, V.42, MNP 2-4	Qmodem Lite	\$199	Internal
PENRIL DATACOM NETWORKS 1300 Quince Orchard Blvd. Gaithersburg, Md. 20878 (301) 921-8600	DX144	14,400 data, send-and-receive fax	V.32bis, V.17	n/a	\$595	48 ounces; 2x5.5x8.2 inches
PRACTICAL PERIPHERALS 375 Conejo Ridge Thousand Oaks, Calif. 91361 (805) 497-4774	Alliance	19,200 data 14,400 send-and-receive fax	V.32bis, V.42, V.42bis, MNP 2-5, V.17	n/a	\$1,295	60 ounces; 2.5x9.7x10.1 inches
PM2400FXMT/Mac	14,400 data, send-and-receive fax	V.32bis, V.42, V.42bis, MNP 2-5, V.17	QuickLink II	\$299	12.6 ounces; 6.8x4.6x1.1 inches	
PM9600FXMT/Mac	9,600 data, send-and-receive fax	V.32bis, V.42, V.42bis, MNP 2-5	QuickLink II	\$269	12.6 ounces; 6.8x4.6x1.1 inches	
PM2400EFXSA/Mac	2,400 data 9,600 send-and-receive fax	V.22bis, V.42, V.42bis, MNP 2-5, 10	QuickLink II	\$189	19 ounces; 10.5x5.5x1.3 inches	
PM2400FX96SA/Mac	2,400 data 9,600 send-and-receive fax	V.22bis	QuickLink II	\$159	19 ounces; 10.5x5.5x1.3 inches	
PM2400SA/Mac	2,400 data	V.22bis	n/a	\$119	19 ounces; 10.5x5.5x1.3 inches	
MacVoyager	14,400 data 9,600 send-and-receive fax	V.32bis, V.42, V.42bis, MNP 2-5	FAXstf and QuickLink II	\$499	6 ounces; 1.2x4.5 (diameter) inches	

Source: Vendors.

The Best Way To Get To Your Printer On Ethernet Is Now Way Better.



New version 2.0 is the best update we've ever made to our award-winning EtherPrint, the original and best way to put your LocalTalk printers on Ethernet.

1. New Security Features.

For easier network management, EtherPrint can now be named and password protected. And our new SecurIt™ protection software lets you assign passwords and control access to any LocalTalk device attached to any EtherPrint in any zone.



2. Easier Installation.

EtherPrint has always been renowned for being remarkably easy to install and use, right out of the box. Well now we've made it even easier. You can power on EtherPrint and its LocalTalk devices in any sequence for fast, error-free start up.

3. Connect More Devices.

A single EtherPrint now connects two printers or other LocalTalk devices. That's double the device support for the same low retail price of \$499. EtherPrint Plus connects up to four devices for just \$599, which makes EtherPrint very well connected.

\$499.

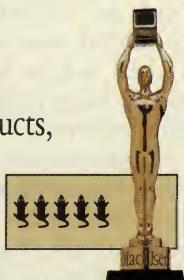
4. More Ethernet Options.

All Ethernet cable types are supported, from thick and thin to 10BASE-T. But only EtherPrint offers the option of all three connectors on one model. And with our

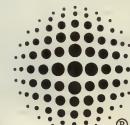
auto-sensing technology, there are no switch settings to change when you switch cable types.

5. Way Better Support.

Like all Dayna networking products, EtherPrint comes with a life-time warranty, 24-hour turn around on repairs, and free technical support from the best trained technicians in the Macintosh networking industry.



Dayna led the way in LocalTalk printing on Ethernet. It's only fitting that now we've made it better. Way better. Ask your reseller about EtherPrint today, or call us directly for more information.



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Macintosh Networking Specialists

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Colorocs back with 24-bit laser

Tabloid printer does full-bleed CMYK

By Matthew Rothenberg

Norcross, Ga. — After two years of financial hardship, color-laser trailblazer Colorocs Corp. next month will return to action with a 24-bit PostScript-compatible output device.

The CP4007 is based on a proprietary 300-dpi engine. It prints

CMYK (cyan, magenta, yellow, black) full-bleed images measuring up to tabloid size to plain paper as well as to some types of transparency film and labels. It can output as many as 5 pages per minute in four-color mode and 40 ppm in monochrome, according to Colorocs. The device will ship with a 250-sheet paper cassette.

The printer will be available with the stand-alone Q-Script 2000 printer controller from Quintar Co. of Torrance, Calif., which comes

with the Level 1 version of Pipeline Associates Inc.'s PowerPage PostScript interpreter and 35 Type 1 fonts. The RIP (raster image processor) features a 25-MHz AMD 29050 RISC chip and 6 Mbytes of RAM, which can be upgraded to 38 Mbytes. It switches automatically among LocalTalk, Centronics parallel and RS-232C serial interfaces, and it includes a SCSI port for a hard disk. EtherTalk and TCP/IP interfaces are optional.

The CP4007 without the controller will cost \$15,100 and will require a \$395 base unit; the company said the printer will cost less than \$25,000 with the Q-Script 2000 controller.

Colorocs first announced the color laser printer in 1991, but financial problems forced the company to file for Chapter 11 bankruptcy. Its confirmation hearing is scheduled for June, Colorocs said.

QMS Inc. of Mobile, Ala., in June reportedly will announce a RISC-based Adobe PostScript Level 2 laser printer that outputs color at 2 ppm and monochrome at 8 ppm. Sources said the QMS device will probably cost about \$15,000 when it ships at year-end (see MacWEEK, April 12).

Colorocs Corp. is at 1 Meca Way, Norcross, Ga. 30093. Phone (404) 564-5520; fax (404) 564-5616 or 564-5524. □

The scanner has an optical resolution of 400 by 1,200 dpi, which can be increased to 1,200 by 1,200 dpi via software interpolation. It can scan up to 2.5 inches per second, according to PixelCraft. The 7650C includes a SCSI interface and cable.

The scanner is bundled with the company's QuickScan image-acquisition software and its \$695 Color-

Paint Alchemy plug-in conjures up brush effects in Photoshop, Painter

By Carolyn Said

San Francisco — Mac artists will be able to apply a multitude of effects onto their Adobe Photoshop images with Paint Alchemy, a new Photoshop plug-in shown at this month's Seybold Seminars 93 in Boston.

Developed by Xaos Tools Inc. and scheduled to ship next month, Paint Alchemy works with Photoshop 2.0.1 or later, as well as other applications that accept plug-ins such as Fractal Design Corp.'s Painter.

Paint Alchemy offers an extensive set of tools for enhancing entire pages or selected areas with brush strokes. Users will not be able to paint over the image manually with the brushes, however.

The program will ship with 34 brush shapes that can be customized via controls for more than 30 attributes, including angle, transparency, size, color, number and style. Users will be able to link each attribute to image qualities such as hue, saturation and brightness. For example, a user could set brush-stroke transparency to vary with the saturation of an image, stroke size to change with brightness and stroke angle to follow the hue contour.

Users will also be able to create their own brushes from any PICT file, Xaos said.

Paint Alchemy will ship with preset styles for special effects such as impressionistic brush strokes and bubbles.

Paint Alchemy will cost \$29.95 until June 30, when the price will rise to \$99. Xaos will offer 50 extra brush shapes for \$19.95. A bundle of Paint Alchemy and the additional brush shapes will be \$39.95 until June 30 and \$109 thereafter.

Xaos is best-known as a developer of high-end animation programs for Silicon Graphics workstations.

Xaos Tools Inc. is at 600 Townsend St., Suite 271E, San Francisco, Calif. 94103. Phone (415) 558-9831 or (800) 833-9267; fax (415) 558-9160. □



Paint Alchemy, a plug-in for applying brush strokes to an image, lets users control brush attributes via a series of cards. A Preview feature (right) lets users test an effect on a small area of an image quickly.

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The scanner is bundled with the company's QuickScan image-acquisition software and its \$695 Color-



PixelCraft's Pro Imager 7650C captures images up to tabloid size in 24-bit color. It has an optical resolution of 400 by 1,200 dpi.

PixelCraft tones up scanner for large-format color work

By Matthew Rothenberg

Oakland, Calif. — PixelCraft Inc. this month introduced a large-format 24-bit-color flatbed scanner at Seybold Seminars 93 in Boston.

The Pro Imager 7650C, scheduled to ship next month for \$11,495, captures eight bits each of RGB (red, green, blue) information per pixel in three passes and handles images measuring up to 11.7 by 17 inches. The scanner has an optical resolution of 400 by 1,200 dpi, which can be increased to 1,200 by 1,200 dpi via software interpolation. It can scan up to 2.5 inches per second, according to PixelCraft. The 7650C includes a SCSI interface and cable.

The scanner is bundled with the company's QuickScan image-acquisition software and its \$695 Color-

Access color-correction program for Adobe Photoshop files.

The company also cut the price of the Pro Imager 7650, the tabloid-size, eight-bit gray-scale version of the scanner, to \$8,495 from \$9,695 and began bundling it with QuickScan. In addition, PixelCraft cut \$3,000 off its Pro Imager 4520 RS, a slide scanner that handles transparencies ranging from 35mm to 4 by 5 inches; the device now costs \$16,995.

Last year, PixelCraft was spun off from Xerox Corp. as a high-end scanner distributor and purchased Barneyscan Corp. of Alameda, Calif. (see MacWEEK, Sept. 21, 1992).

PixelCraft Inc. is at P.O. Box 14467, Oakland, Calif. 94614-2467. Phone (510) 562-2480 or (800) 933-0330; fax (510) 562-6451. □

Radius aims Rockets at high-end publishing

By Carolyn Said

San Jose, Calif. — Radius Inc. is packing the multiprocessing power of its Rocket 68040 accelerators into two Mac systems for high-end publishers.

At Seybold Seminars 93 this month in Boston, the company released the systems and announced that a raft of third-party products dovetail with them.

► **Radius Publishing Station**, for users who need fast image processing and rendering, is based on a Quadra 950 with up to four Radius Rocket 33 accelerators and a Radius Precision-Color 24X Interface display card.

Each Rocket can have either Radius' SCSI-2 Booster, a daughter-card that increases the speed of SCSI I/O, or DSP Booster, a daughter-card that speeds applications such as Adobe Photoshop.

Radius said a fully loaded Publishing Station has 120 mips of processing power.

► **Radius Publishing Server**, a print and image server for pre-press, is also based on a Quadra 950 with Radius' color display card. It typically comes with three Rocket 33 accelerators, two equipped with SCSI-2 Boosters to improve input from scanners and output to imaging devices, and one with a DSP Booster to improve Adobe Photoshop performance.

Both systems use Radius Rocket-Share software, which lets each Rocket act as an independent processor. Pricing depends on configuration. A Publishing Station with four Rockets, three DSP Boosters and one SCSI-2 Booster costs about \$20,000.

The two systems apparently are the

precursors to SkyLab, Radius' stand-alone box that packs even more Rockets into a "media server" that runs Mac ROM code licensed from Apple (see MacWEEK, March 29). Radius officials said users should expect "a comprehensive Mac-compatible system for the publishing industry" in the next few months.

Products from 3M, Equinox Technology Inc., Hyphen Inc., Ultimate Technographics Inc., Compumation Inc. and Variyper Inc. can benefit from the systems, Radius said.

Radius is selling the systems through a newly established network of value-added resellers and systems integrators. Information about distribution can be obtained at (800) 227-2795.

Radius Inc. is at 1710 Fortune Drive, San Jose, Calif. 95131. Phone (408) 434-1010; fax (408) 434-6437. □

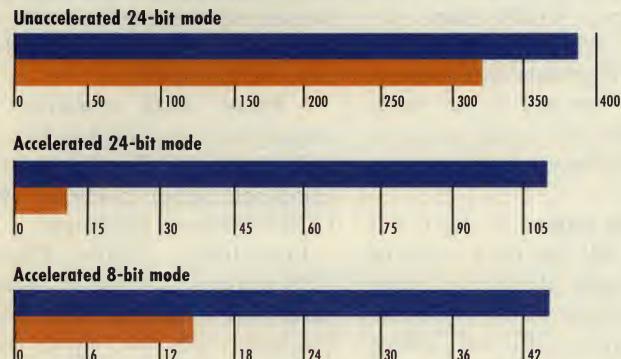
IT DOESN'T TAKE A ROCKET SCIENTIST TO FIGURE OUT WHICH 24-BIT COLOR GRAPHICS CARDS ARE THE FASTEST.

MacWEEK

Reprinted From January 13, 1992

BENCHMARKS

Hydra composite tests (Results in ticks; lower is better)



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Excerpted From MACWORLD February 1993

MW LAB Gauging Video Speed

Products are ranked in overall performance order, from fastest to slowest, within each monitor size category. The best in each category is indicated in red.

With 19-inch Monitors
SuperMac Thunder/24
SuperMac Spectrum/24 PDQ Plus
SuperMac Spectrum/24 Series III
Radius PrecisionColor 24Xk
RasterOps 24XLi
Radius PrecisionColor 24X
RasterOps Paintboard LI

REAL-WORLD TESTS

In our real-world tests, the size of the monitor dramatically affects performance for line scrolls: bigger monitors are slower. However, bigger monitors can have an advantage for page scrolls, where all the data on the new page is moved onto the screen in one step. Scrolls are good tests of actual performance because they are common tasks and because they cause the Mac to redraw a range of objects, from text to graphics.

Vertical Scroll (in seconds)

Average results for a series of up and down scrolls (one line at a time) in Excel and Word documents.



Horizontal Scroll (in seconds)

Average results for a series of left and right scrolls (one column at a time) in Excel and Word documents.



Page Scroll (in seconds)

Average results for a series of up and down scrolls (one screen at a time) in Word documents.



LOW-LEVEL QUICKDRAW TESTS

Low-level tests of QuickDraw command processing show theoretical best performance. The Basic Commands group includes QuickDraw commands that all vendors accelerate. Radius and SuperMac accelerate some other commands, but our tests show that this does not change these boards' performance.

Basic Commands

(speed compared to Apple 8×24)

Relative performance in processing 25 common QuickDraw commands, using the industry-standard Hydra benchmark.

All Commands

(speed compared to Apple 8×24)

Relative performance in processing all 118 QuickDraw commands, using the industry-standard Hydra benchmark.

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MacUser

Figure 1: Speed Results

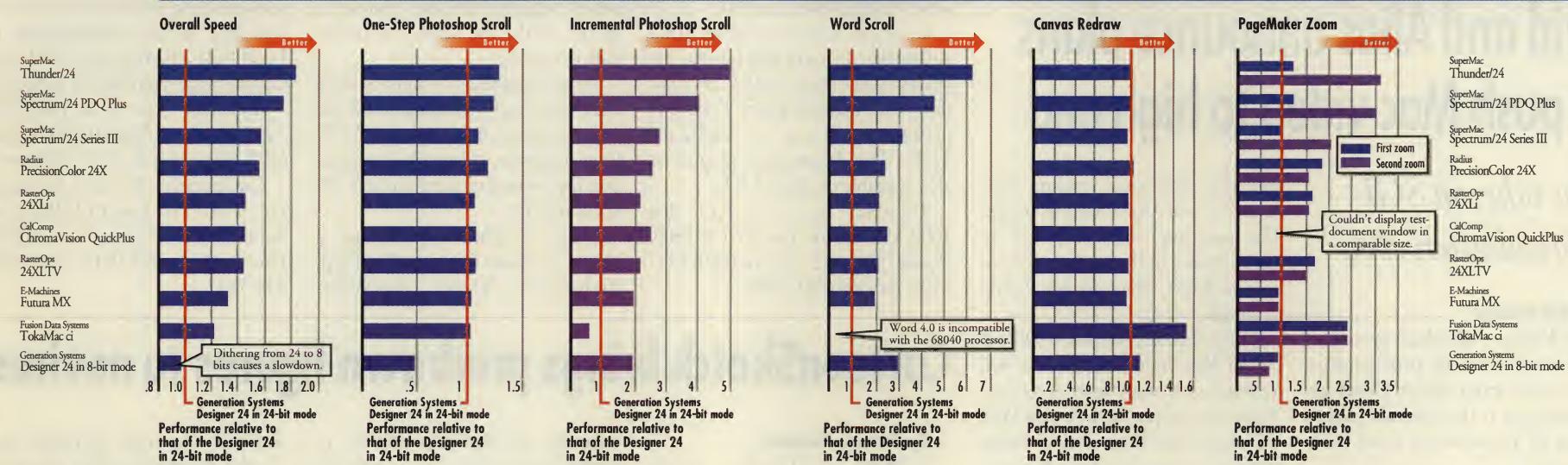


Figure 1:

To find out if an accelerated-video card can improve the performance of some popular applications, we performed a suite of real-world tests. We ran all tests on the same Mac Ici connected to the same monitor. We compared the results with those of a Generation Systems Designer 24 unaccelerated-video card in 24-bit mode. We also subjected the Designer 24 to the same tests in 8-bit mode and repeated the tests with a Fusion Data Systems TokaMac ci to see the effect of CPU acceleration.

Reprinted From May 1992

Overall Speed:

The SuperMac Thunder/24 and Spectrum/24 PDQ Plus were fastest overall, almost doubling the speed of the Designer 24 unaccelerated-video card in 24-bit mode.

Dithering from 24 to 8 bits causes a slowdown.

One-Step Photoshop Scroll:

Most users of 24-bit color frequently use Photoshop, so we scrolled through some 24-bit Photoshop images to see if the accelerated-video cards could beat our control product. The Thunder/24 was 25 percent faster than the unaccelerated-video card, and the TokaMac ci CPU accelerator offered no improvement at all.

Incremental Photoshop Scroll:

In the incremental scroll, SuperMac's Thunder/24 was five times as fast as the unaccelerated-video card. The TokaMac ci was actually 40 percent slower.

Word Scroll:

To see if Word users stand to gain anything from video acceleration, we scrolled through a ten-page text document and found that the SuperMac Thunder/24 was more than six times as fast as the Designer 24. The SuperMac Spectrum/24 PDQ Plus came in a close second, and all the other cards were about twice as fast as the unaccelerated card. As 24-bit color is a waste for Word users, we ran the same test on the Designer 24 in 8-bit mode and found that it was nearly three times as fast as in 24-bit mode, beating the majority of the accelerated-video cards. We could not run the test with the TokaMac ci, because Word 4.0 is incompatible with the TokaMac ci's 68040 processor.

Canvas Redraw:

We were surprised to find that the accelerated-video cards did nothing to speed up a Canvas redraw. The one product that really helped in this task was the TokaMac ci, providing that this task was primarily a compute-intensive one, a task for which video accelerators are not well suited.

PageMaker Zoom:

Finally, we zoomed out to a 100-percent view from a 400-percent view of a PageMaker document consisting of text and a 24-bit-color image. We then repeated the same test to see if the cards were caching any of the video data. All the accelerated-video cards, with the exception of the Radius PrecisionColor 24X and the two RasterOps cards, performed the second zoom much faster than they did the first. The Designer 24 card was slower in 8-bit mode than it was in 24-bit mode because the 24-bit graphic had to be dithered for the 8-bit display.

The Hydra QuickDraw performance test has become the standard for evaluating the speed of 24-bit color graphics cards. As you can see, Thunder/24™, Spectrum/24 PDQ™ Plus, and Spectrum/24™ Series III outperform all other 24-bit color graphics cards on the market.

And at \$999 the new Spectrum/24™ Series IV is hard to beat. Faster than the Series III, yet the same low price.

So, don't waste any more time or money. Take it from the experts and call for a copy of the complete test results.

And you don't have to be a rocket scientist to see just how fast SuperMac graphics cards are.

For your nearest Authorized Reseller, call **800-334-3005**.

For information via fax, call SuperFacts™ 800-541-7680.

SUPERMAC
The SuperSource for Color

Faster Phaser dye-sub device due

Tektronix promises up to 20-fold speedup

By Kirsten L. Parkinson

Wilsonville, Ore. — Tektronix Inc. next month will release a revised version of its Phaser IIISD dye-subslimation printer that outputs bit-mapped images 10 to 20 times faster than the current model.

The Phaser IIISDX will cost \$9,995, the same price as the original Phaser IIISD, which it will replace. The update includes new ROM chips, drivers and an Adobe Photoshop plug-in. The company said it worked with Adobe Systems Inc. of Mountain View, Calif., to streamline the printer's PostScript Level 2 code, speeding output of scanned images dramatically. In Tektronix's tests, a 24-bit-color photograph that took about 45 minutes to process with the Phaser IIISD took about three minutes with the Phaser IIISDX.

The Phaser IIISDX also features improvements to the company's proprietary TekColor PS color-matching algorithms, increasing the printer's accuracy as a pre-press color-proofing device, according to Tektronix.

Like its predecessor, the Phaser IIISDX offers 300-dpi CMYK (cyan, magenta, yellow, black) output to letter-, legal- or A4-size paper or transparencies. The printer is based



The Phaser IIISDX, a Level 2 dye-subslimation printer from Tektronix, will process images 10 to 20 times faster than the company's older Phaser IIISD model.

on a 24-MHz AMD 29000 RISC processor running on 16 Mbytes of RAM, which can be expanded to 64 Mbytes with special SIMMs. It offers automatic switching among LocalTalk, RS-232 serial and Centronics parallel interfaces (see MacWEEK, July 27, 1992).

Upgrades from the Phaser IIISD will be free to users who bought the Phaser IIISD after April 1. Installation of the upgrade kit by Tektronix personnel will cost an additional \$350. The Photoshop plug-in is also available on AppleLink.

Tektronix Inc. is at P.O. Box 1000, Wilsonville, Ore. 97070-1000. Phone (503) 682-7377 or (800) 835-6100; fax (503) 682-7450. □

and Alias' SGI-based systems, Alias Animator and Alias PowerAnimator. The company said ODS will be implemented in the next versions of both packages, which are due to ship in the fall.

The main component of ODS will be the AliasTime utility, which will let users save animations as QuickTime files for playback on the Mac.

Despite the latest technological inroads, however, many video professionals said they still have doubts about the video-processing capabilities of current Macs. Even Apple CEO John Sculley admitted in an NAB press conference that the processing power required for serious video production won't be available on the Mac platform until the company's RISC-based PowerPC Macs ship next year.

"While Mac tools are good, the workstation technology that SGI is offering is at a better price-performance range," said Mike Backes, a Hollywood, Calif., desktop-video analyst.

Avid Technology Inc. is at 1 Metropolitan Park W., Tewksbury, Mass. 01803. Phone (508) 640-6789; fax (508) 640-1366.

Alias Research Inc. is at 110 Richmond St. E., Toronto, Ontario M5C 1P1, Canada. Phone (416) 362-9181. □

Avid and Alias announce plans to push Mac video to high end

Mac takes on SGI at broadcasters show

By Erik Holsinger

Las Vegas — The Mac moved to claim a piece of the professional-video action from Silicon Graphics workstations at the National Association of Broadcasters show here last week.

Avid Technology Inc. and Alias Research Inc. both made announcements that could help incorporate the power of workstation technology into Mac production systems.

► **Avid and Lucasfilm Ltd.** announced an alliance to produce professional tools for film and video production. Although the companies made no specific product announcements, they said the alliance will initially focus on incorporating technology from Lucasfilm's Sun-based EditDroid and SoundDroid film- and sound-editing systems into future Avid products for the Mac.

Avid distributes its sound- and video-editing software with a variety of Mac-based hardware systems.

► **Alias** announced Open Digital Studio (ODS), software technology designed to simplify the exchange of multimedia files between the Mac

Archetype, COPS offer servers to speed pre-press, printing

By Carolyn Said

Boston — Two companies at Seybold Seminars 93 here this month showed servers designed to speed pre-press and printing tasks.

Image Engine from Archetype Inc. and PServe Advanced Document Server (ADS) from Co-Operative Printing Solutions Inc. (COPS) will let users work with low-resolution versions of an image while laying out a page and send high-resolution versions to the output device.

► **Image Engine**, to ship in July for \$995, will run under A/UX on the new Apple Workgroup Server 95. It conforms to the Open Pre-press Interface (OPI) and Desktop Color Separation (DCS) standards for desktop production of color files.

After users put TIFF, Encapsulated PostScript or DCS files into a folder, Image Engine will create low-resolution FPO (for position only) proxies on the page. When the page is printed, the server replaces the low-resolution image with the high-resolution data on the fly.

Image Engine also simplifies DCS color proofing by merging a DCS file set's resolution-independent CMYK (cyan, magenta, yellow, black) separation files instead of using the set's 72-dpi master file.

Image Engine's features are a subset of those found in InterSep, Archetype's \$3,995 NetWare-

based image-management system for Mac and Windows clients. Archetype announced several new features for InterSep at the Seybold show: Support for Eastman Kodak Co.'s Photo CD and Scitex CT formats is available now for \$995 per format, and imagesetter-emulation software for PostScript files is due next month for \$495.

► **PServe ADS**, scheduled to ship in June, runs under EasyServer, AFP (AppleTalk Filing Protocol)-compliant server software for COPS' 486-based computers.

Like Image Engine, PServe ADS supports OPI and DCS standards, and it also generates low-resolution files for layout and swaps them with high-resolution images at print time. PServe ADS supports spooling for up to eight devices running two input queues each, job accounting and logging, prep-file management, and error tracking, COPS said.

PServe ADS sells for \$5,495 for software only, including EasyServer. Kits that include combinations of LocalTalk, Ethernet and SCSI controllers range from \$5,795 to \$6,995.

Archetype Inc. is at 100 Fifth Ave., Waltham, Mass. 02154. Phone (617) 890-7544; fax (617) 890-3661.

Co-Operative Printing Solutions Inc. is at 5950 Live Oak Parkway, Suite 175, Norcross, Ga. 30093. Phone (404) 840-0810; fax (404) 448-7821. □

CartoonSketch brings predrawn figures to novices

By Kirsten L. Parkinson

Seattle — Charles Schulz wannabes can get some help from a new low-cost cartoon-drawing program from Maki Software.

CartoonSketch is a HyperCard-based program that offers basic black-and-white drawing tools and a library of predrawn figures to help users create cartoon clip art and comic strips.

Features include:

► **Predrawn images.** The program comes with more than 1,000 images, including human ears, eyes, heads, bodies and hair, that users can combine to create cartoon figures. Other images include animals, castle elements and quotation boxes.

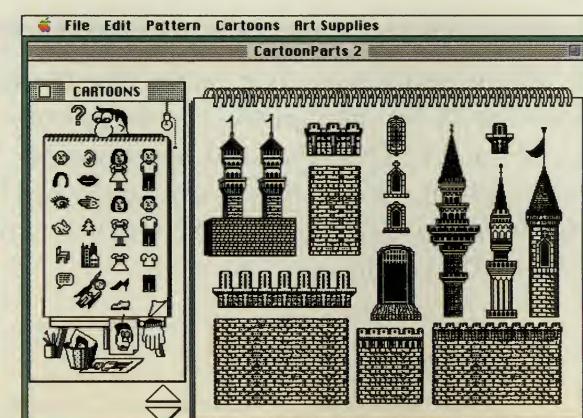
► **Drawing tools.** CartoonSketch incorporates HyperCard's painting tools, such as a pencil, eraser, paint bucket, spray can and controls for drawing simple shapes.

► **Effects.** Additional tools let users manipulate their drawings by

rotating or skewing objects or making objects appear to be fading in or out.

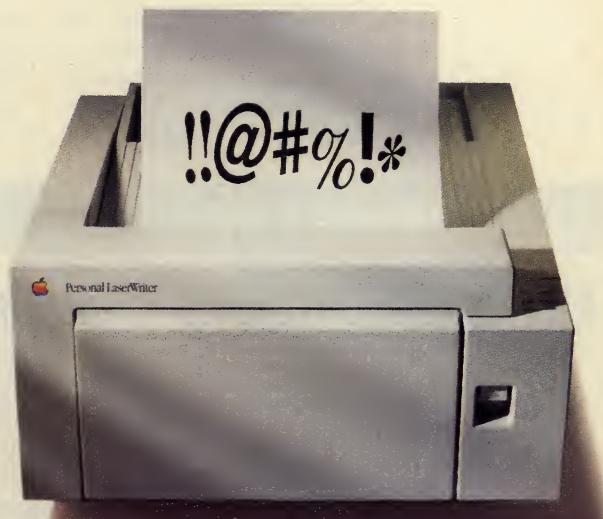
A Shadow feature automatically creates a shadow shape that corresponds to the shape of a drawn object, and an Invert button reverses the black and white areas of an image.

► **Album.** The Album feature lets users create their own library of



Maki Software's CartoonSketch includes more than 1,000 predrawn images, such as these castle elements, that users can combine to create cartoons.

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Tech Analysis

Getting the most from scans

Scanning software for the Mac is getting better all the time but still doesn't offer the quality found on high-end scanners.

By Bruce Fraser
Desktop scanner hardware is constantly improving, but with a few exceptions the controls offered by most desktop scanner software still lag far behind those built into high-end scanners. High-end scanners perform functions for which most desktop scanners rely on Mac software, such as sharpening and RGB-to-CMYK conversion.

High-end scanners demand much more skill from the operator: In addition to the physical skills of mounting artwork on the drum, the operator must know how to "read" an image and set the scanner controls accordingly, often without the benefit of an image preview and by using an interface comprised mainly of knobs on the front panel.

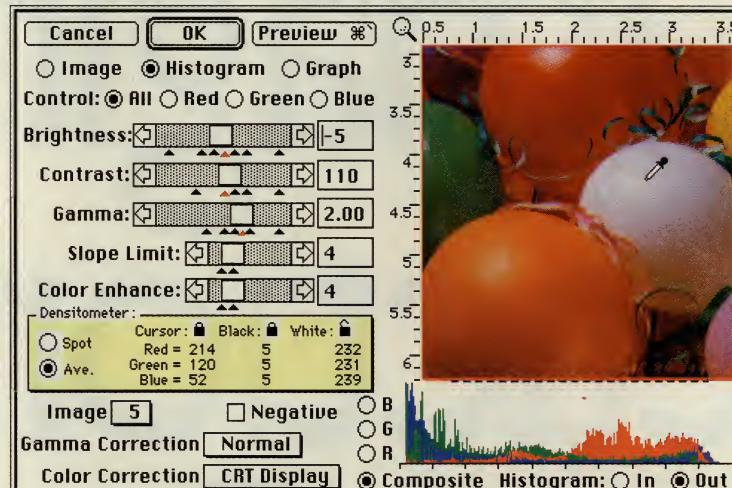
But whether you're using a high-end or desktop scanner, your aims are likely to be similar: to capture the full tonal range of the image and compress it into a range your output process can handle. You want to set the size of the scan so that it has sufficient resolution to produce good results at the size and screen frequency at which it will be printed. And you may also want to compensate for defects in the original — for example, correcting a color cast caused by using daylight film under tungsten lighting or correcting a poorly calculated exposure.

Avoiding post-scan work. These are all operations that should, wherever possible, be performed in the scan itself rather than as post-scan operations. Unfortunately, much of today's desktop scanning software offers very little help in getting good scans — too many vendors seem to assume that any shortcomings in the image will be fixed post-scan.

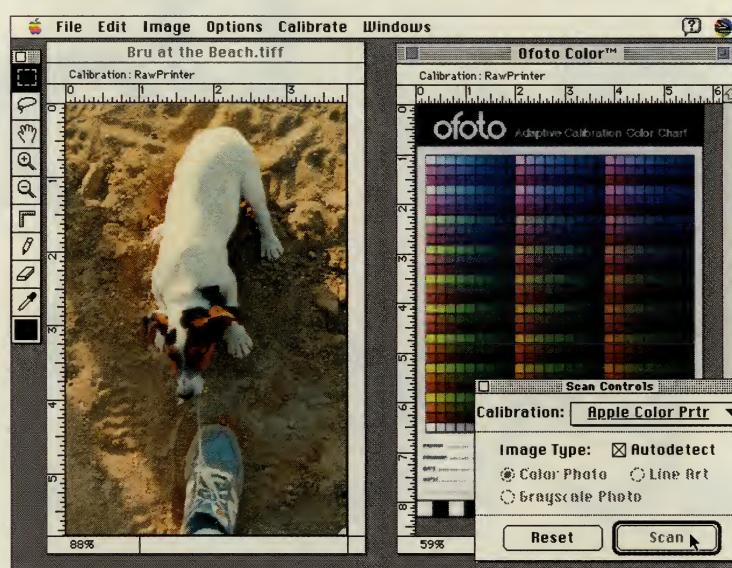
To some extent, this may be because most scanner vendors ship their software in the form of an Adobe Photoshop plug-in: Since Photoshop has copious image-processing capabilities, why include advanced controls in the plug-in?

Well, there's a good reason to do so. Photoshop lets you make huge changes to an image's brightness, contrast, tone curves and color balance, but a scanned image has only eight bits per color of RGB (red, green, blue) information (from most desktop scanners) or eight bits of CMYK (cyan, magenta, yellow, black) information if you're taking CMYK scans from a high-end scanner.

If you start making drastic changes to the tone curves or the color balance, you'll get sudden, unnatural-looking tone shifts, and you'll exaggerate any noise present in the shadow areas. For the best results, the scan should be as close as possible to the desired final result



In La Cie Silver-scan's advanced controls dialog, users can adjust gamma, brightness and color enhancement. A densitometer is available to determine color values under the cursor and to allow users to set black-and-white limits.



Light Source's Ofoto scanner software lets users calibrate a scanned image based on a profile for an eventual output device. The software also features a zoomable color preview and can automatically calculate image resolution based on final image size.

— that way, you're making the best possible use of the eight bits per channel.

If you have a scanner that captures more than eight bits per color, such as the nine-bit Silverscanner II from La Cie Ltd. of Beaverton,

Ore., or the 10-bit Arcus from Agfa (a division of Miles Inc.) of Wilmington, Mass., the advantages of correcting tone and color-balance problems in the scan itself rather than post-scan are even greater. If you wait until after the scan to fix these, you're essentially wasting the extra bits the scanner can capture.

But it's possible to get good quality even from eight-bit desktop scanners and be reasonably productive in the process if the software offers the right features.

Radius Inc. VideoVision card and a MediaTime sound board from Raster-Ops Corp. He scanned artwork from the "Milagro" CD package into Adobe Photoshop to manipulate it. He then transformed it into the positive image using Gryphon Software's Morph animation program. The soundtrack came from the "Milagro" CD and was digitized and synchronized with the visual input using Passport Producer.

The resulting still and moving images appeared in windows overlaid on a background created in Photoshop. Silveria played the entire piece live from his Mac directly onto a large-screen rear-projection Sony monitor.

"The hardest part was coordinating the massive amount of information needed," Silveria said. "It was almost as much work as a 30-minute TV show, and only four people worked on it." — By Claudia Willen



the performers in each segment."

The still shown here is from the 35-second segment of Carlos Santana's entry, "Gypsy/Grajonca," from the album "Milagro," nominated in the Best Rock Instrumental Performance category.

To produce this clip and others, Silveria worked on a Quadra 950 equipped with a

Preview power tools. Virtually all desktop scanners perform a prescan, which gives a small-scale view of the image to be scanned on the monitor: Most users make decisions about the scan based on what they see in the prescan image. In an ideal world, what you see on the monitor would match your final output: Apple's ColorSync color-management architecture offers the promise that, once the various pieces are in place, it will at least be close. But for now, making judgments based on the monitor requires experience, some kind of monitor calibration, and a good idea of the differences between what you see and what you get.

But even with calibration between monitor and output, it's difficult to see, for example, a slight cyan cast in highlights or a blue cast

See Scanning software, Page 30

SCREEN TEST

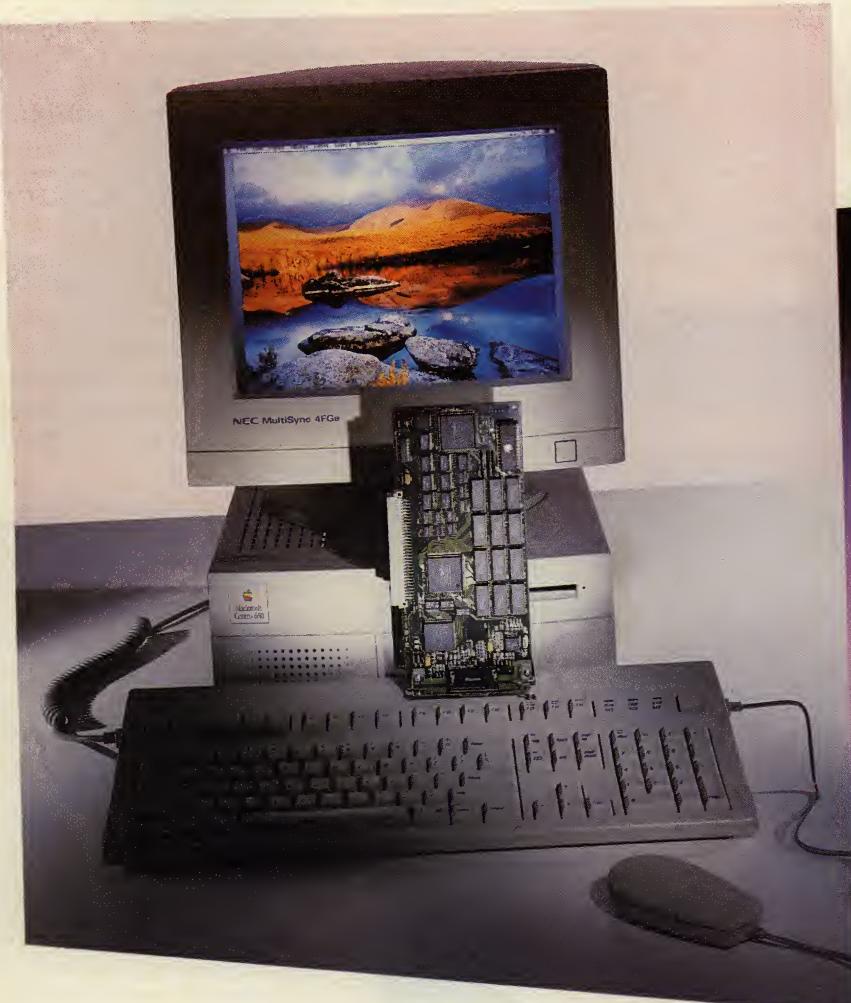
Multimedia producer steals limelight at Grammy party

San Francisco — Brent Silveria, creative director at Passport Designs Inc. of Half Moon Bay, Calif., had not been behind the scenes since his high-school stage-crew days. However, recently he took his Mac backstage to produce and direct a multimedia presentation saluting San Francisco Bay area 1993 Grammy Award nominees.

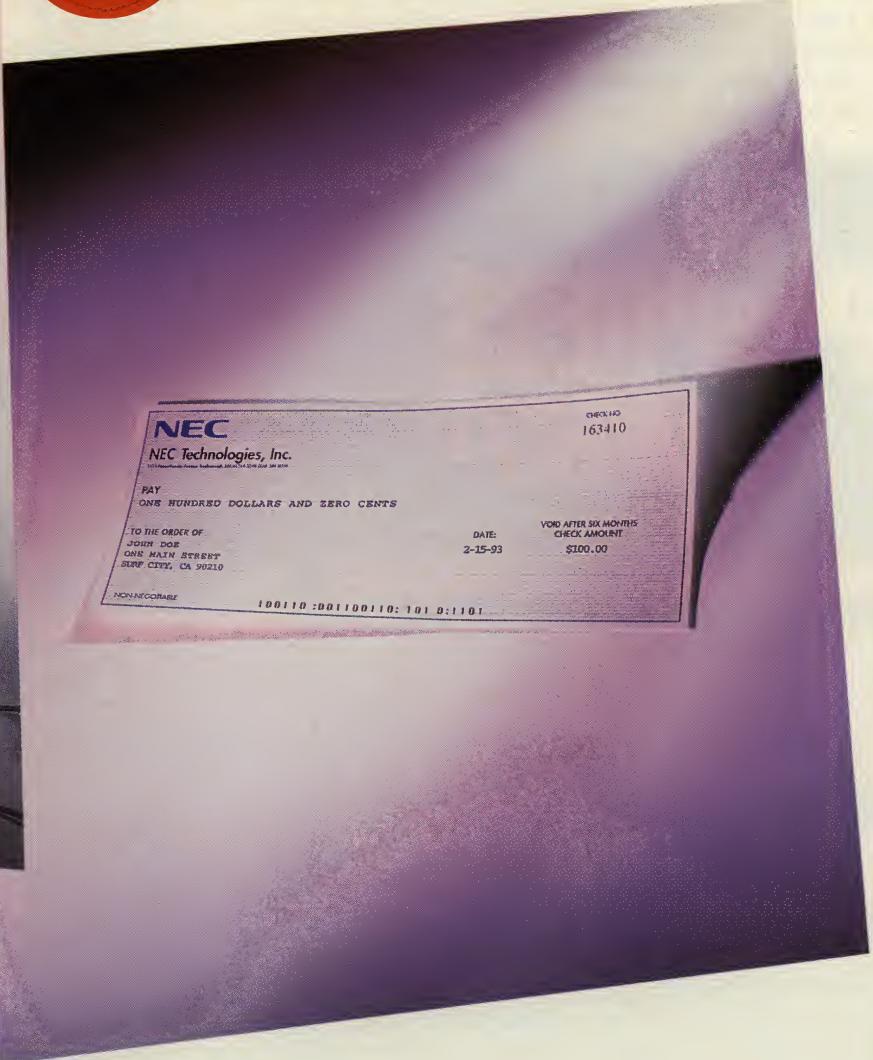
Silveria used his company's new software, Producer, to combine and play back music, video and graphic effects into 30 segments for the recent Grammy nominees' party, here and in Los Angeles. Producer is a media-integration system, which allows users to create and integrate PICTs, slides, QuickTime movies and animation using digital, audio and MIDI (Musical Instrument Digital Interface) components.

"I tried to keep a nice variety going so it wouldn't look repetitive," Silveria said. "I tried to capture the feel of the music and

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Scanning software

From Page 28

in shadows. An on-screen densitometer, which provides a readout of the red, green and blue values under the cursor, is invaluable in detecting color casts in neutral areas, even when they aren't visible on the screen. This is a standard feature in image-processing applications such as Photoshop, Fractal Design Corp.'s ColorStudio and Electronics for Imaging Inc.'s Cachet, but most desktop

scanner software lacks it, with the notable exceptions of Silverscan from La Cie and QuickScan from PixelCraft Inc. of Oakland, Calif., the latter of which also offers automatic cast correction.

Of course, if the preview is gray-scale rather than color, you can't use it to make any color decisions at all. An optional gray-scale preview can be a useful productivity feature, however; it's faster than a color preview and is useful when you're working with a set of

images that have the same color problems. But when it's the only option, it doesn't make color scanning any easier.

Tone curves, on the other hand, are fairly easy to judge from a calibrated monitor. The need here is simply for better controls. Most scanner software has brightness and contrast adjustments: With skill and practice, you can use these to obtain good scans.

But a great deal of trial and error is involved. If you reduce the contrast, you usu-

ally must turn up the brightness, then increase the contrast and so on — it's like fiddling with a TV set. Much more useful are controls that allow you to set an image's white point and black point by clicking the appropriate spots in the prescan image. Controls such as these are found in scanning software from Microtek Lab Inc. of Torrance, Calif.; Hewlett-Packard Co. of Palo Alto, Calif.; La Cie; and Agfa.

But the postage-stamp-size previews offered by most scanner software make it difficult to do this with any precision. A zoomable preview makes it much easier to distinguish between a highlight where you want to preserve some texture and a specular highlight that you actually want to appear pure white.

Curves, crops and resolution. Once you've set the shadow and highlight points, you also need some way of manipulating the midtones. The few desktop scanners that offer such controls use a gamma control similar to either Photoshop's Levels control, where you adjust sliders to control the relationship between input density and output density, or Photoshop's Curves control, where you change the shape of a curve. La Cie and Microtek use the former approach, while Agfa offers the latter. Either technique works and provides much better results than post-scan adjustments, particularly with scanners that capture more than eight bits per color.

Even the simple process of setting a cropping area and the resolution of the scan could stand improvement in most desktop scanner software. Too many scanner drivers let you drag a selection marquee over only a postage-stamp-size preview image. It's difficult if not impossible to be accurate with such a tool. A zoomable preview can help here, but a better approach lets you enter the size and width of the cropping area numerically.

Then there's the question of setting resolution. Many users still find the equation dealing with input resolution, output resolution, screen frequency and scaling factor bewildering. The general rule of thumb is that the input resolution in dots per inch should be about twice the screen frequency of the output, multiplied by the scaling factor. Using much less than twice the line screen results in a loss of quality, while going much over twice the line screen creates an unnecessarily large file.

Instead of forcing the user to do the math, the scanner software should allow you to specify the target output device's resolution and screen frequency, tell the software what size the final image should be, and let the computer take care of the calculations involved in determining the correct scanning resolution. Software from Agfa, La Cie, PixelCraft and Light Source Inc. of Larkspur, Calif., can do these calculations for you, but most other software won't.

Scanner software is slowly improving, thanks to efforts by vendors such as La Cie, PixelCraft, Light Source and Microtek. But the features we've been discussing should be the rule rather than the exception. Operations such as sharpening and RGB-to-CMYK conversion can be done post-scan without compromising quality. The greater need in desktop scanning software is to give users the tools that will let them get the best RGB scans the hardware can provide. □

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BUSINESS WATCH

► Industry news
► Market trends



Asanté takes early lead in Ethernet race

By April Streeter

San Jose, Calif. — If the Mac Ethernet peripherals business is a marathon with runners racing to stay in as the market expands but margins contract, Asanté Technologies Inc. is ahead by a mile now.

The five-year-old company has emerged over the past two years as the No. 1 vendor of Ethernet boards for the Mac, grabbing about 35 percent of market share, according to International Data Corp. of Framingham, Mass. Apple is next with about 24 percent, leaving Mac-

specific competitors such as Farallon Computing Inc. and Dayna Communications Inc. with just 10 percent between them (see chart).

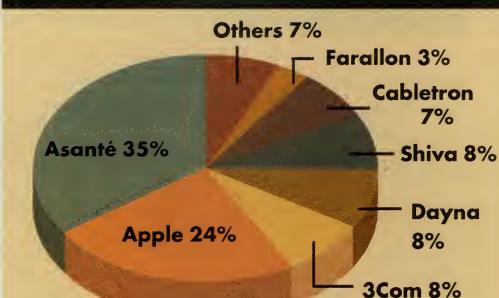
For most businesses, LocalTalk's low cost and simplicity does not compensate for its sluggishness, making the market for Ethernet peripherals — internal and SCSI adapters, transceivers, hubs, and even routers — an expanding one.

But along with opportunity loom increasing competition and commoditization. Asanté has gained and held onto its competitive advantage,

it says, with well-priced products, domestic and international distribution channels the company has coddled, and — eventually — the economies that scale-volume sales bring.

Companies that once were competitive players, such as Shiva Corp. of Burlington, Mass., have publicly stated that they are shifting their focus away from Apple at major corporations.

Adapter market share



IDC's most recent figures for the Mac Ethernet adapter market are based on 1991 data. The company expects that data from 1992, to be released this summer, will be similar.

Source: International Data Corp.

Monitor makers' results vary drastically

SuperMac scores high in sales, profits

By Jon Swartz

San Francisco — Macintosh monitor makers reported vastly different results for the recently completed quarter.

► SuperMac Technology Inc., boosted by record sales of color publishing and digital video products, last week posted record sales and profits for its first fiscal quarter.

Sales for the quarter ended March 31 jumped 74 percent to \$43.7 million, compared with \$25.2 million for the same period a year ago.

Meanwhile, profits for the Sunnyvale, Calif.-based peripherals maker rose 75 percent to \$2.1 mil-

lion, compared with \$1.2 million in the year-ago quarter. The company in February raised \$16.25 million in a new stock offering.

► RasterOps Corp. of Santa Clara, Calif., reported a 23 percent drop in sales and a \$6 million loss for its third quarter ended March 31.

The operating loss included restructuring charges of \$6.7 million. RasterOps reported a profit of \$1.8 million last year.

The company, which has now posted three straight quarters of flat sales, said sales for the third quarter dipped to \$25.1 million, compared with \$32.7 million in the same quarter last year.

In a move to get its corporate house in order, RasterOps this month appointed Paul Smith to the newly created position of president

GM stalls Mac purchases in favor of buying Intel-based machines

By Jon Swartz

Detroit — General Motors Corp. has put the brakes on Mac purchases.

Citing high maintenance costs for Macs as well as a desire to standardize on Intel-based machines, the giant automaker, based here, last month issued a companywide directive prohibiting employees from purchasing Macintosh computers for use at work, according to sources. The company now has several thousand Macs.

The Consistent Office Environment task force, composed of officials of GM and its Electronic Data Systems Corp. subsidiary, made the move after several months of debate, sources said.

"There has been an anti-Mac sentiment among upper management here for years," said one frustrated GM engineer. "You had to fight tooth and nail to buy a large number of Macs."

Instead, GM plans to buy Windows NT machines. Over the next several years it will replace all of its Macs, sources said.

While GM employees said they have not seen the edict in writing, word is "rampant that it's a done deal. No more Macs," said an information systems manager at GM.

GM's decision to drop Macs marks the third such recent setback for Apple at major corporations.

Last year Boeing Co. started a five-year plan to eliminate 20,000 installed Macs, and last month Westinghouse Savannah River Co. decided to stop buying Macs (see MacWEEK, March 29).

Executives from all three companies have told employees they opted for IBM PCs and compatibles because they are cheaper to buy and support and available from more than one vendor and because IS departments wanted to focus on a single computing platform, according to sources at all three companies.

"It's disheartening but not totally surprising," said one longtime Mac proponent at GM. "It's ironic. The Mac was considered nothing more than a toy by management here until Windows came along. Now GUI is the popular buzzword here."

Apple and GM officials declined to comment. □

Drive makers suffer through rough market

By Jon Swartz

San Francisco — An oversupply of drives with capacities of less than 120 Mbytes and a steep drop in prices battered the quarterly results of several major drive makers.

► Conner Peripherals Inc. lost \$22.5 million for its first quarter ended March 31. As a result, the San Jose, Calif.-based company will lay off 1,200 workers, or 10 percent of its worldwide work force, a company spokesman said. The loss is the first in Conner's seven-year history.

The company said sales increased 27 percent to \$558.3 million, compared with \$441.1 million in the same quarter a year ago. Conner reported a \$24.7 million profit in the year-ago quarter.

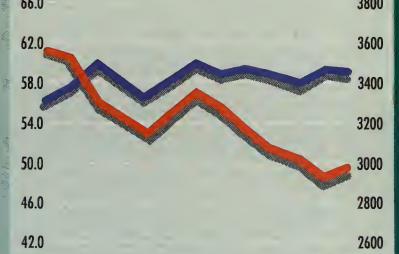
► Seagate Technology Inc.
See Drives, Page 34

StockWatch

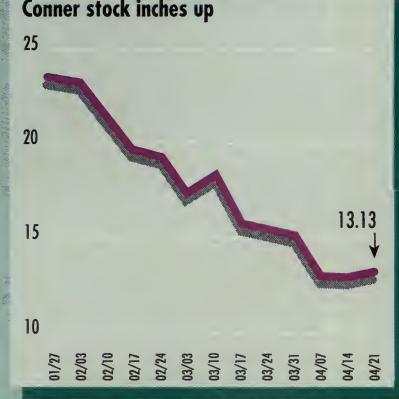
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IBM	49.25	0.77
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Sun	26.25	-10.64
Dow Jones	3439.44	-0.47

Compiled by Nordley International Inc.

■ Apple stock price 49.63 on 04/21/93
■ Dow Jones average 3439.44 on 04/21/93



Conner stock inches up



year history (see story, this page). Conner's rivals didn't fare much better. Both Seagate Technology Inc. and SyQuest Technology Inc. also reported lower quarterly sales and profits.

In a new, independent lab test, the 24-bit color graphics card most people think of as fastest, wasn't.

Ingram Laboratories ran a Hydra QuickDraw™ performance test and found Radius' PrecisionColor 24X™ was 19% faster overall than the Thunder/24™.

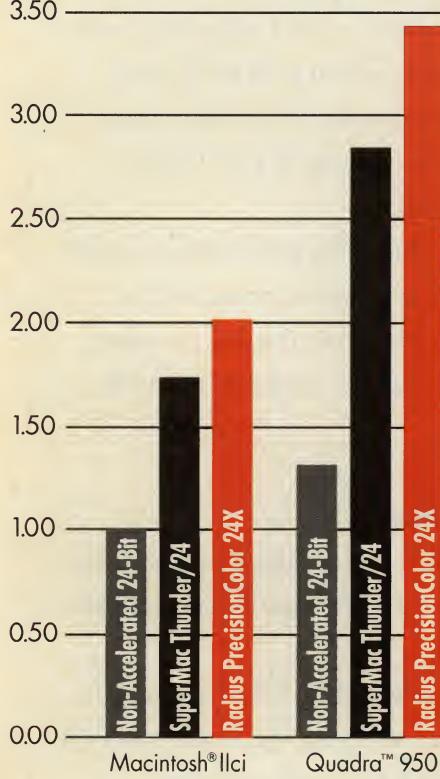
That's surprising, especially since the makers of Thunder/24 want you to pay \$1,250 more for their card.

PrecisionColor 24X isn't just faster and less expensive. It's also available in 7" and 9" versions.

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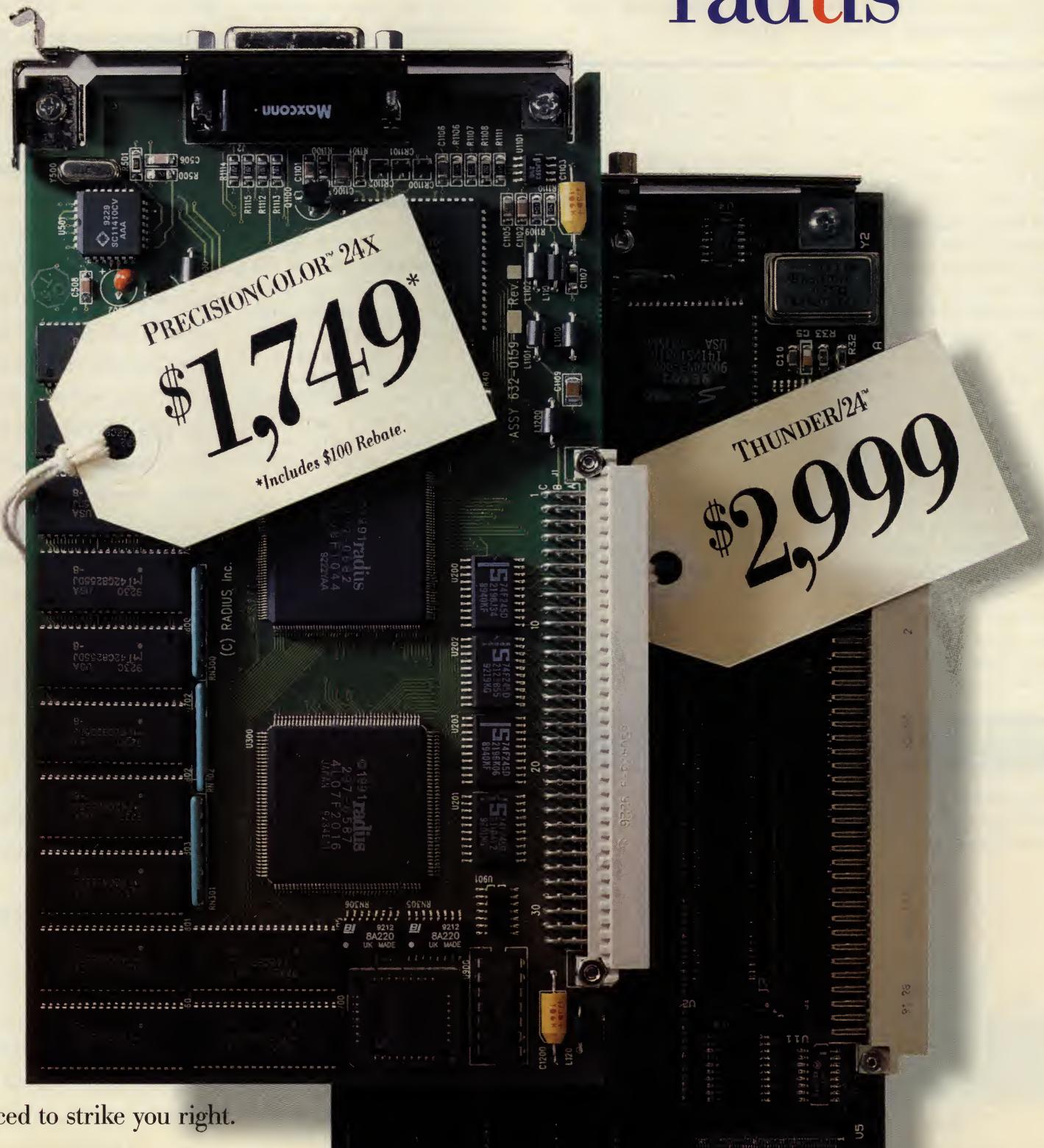
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Apple signs GTSI as its new federal distributor

By Lisa Picarille

Washington — A deal between Apple and Government Technology Services Inc. last week ended Falcon Microsystems Inc.'s decade-long reign as the exclusive reseller of Apple products for routine federal-government purchases.

Under terms of the deal, GTSI as well as Falcon will be authorized to sell Apple's full line of products to the General Services Administration schedule. GTSI already supplies IBM machines and Unix workstations to the government.

GTSI, based in Chantilly, Va., was the leading computer supplier to



the federal government in fiscal 1992, garnering \$152 million in sales from the GSA schedule. The GSA totaled about \$671 million in sales last year.

The deal with Apple culminates years of GTSI proposals to the computer maker about becoming a distributor, according to GTSI spokesman Bob Capozzi. "We have demonstrated our ability to market to the federal government and Apple knows we excel at [that]," he said.

Henry Clifton, director of the Apple Federal Systems Group, said, "Apple periodically reviews its channel strategy and looks at alternatives."

this market," said David Pascoe, Dayna director of marketing. "It's either grow or die."

Major Mac competitors such as Asante, Dayna and Farallon, for example, have continued to keep supplying adapters to work with new Apple CPUs and offer a line of network products. At the same time, each player has had to carve out other niches.

With its success at the lower end of the market, Asante has decided to build larger hubs and internetworking devices, in the process taking on bigger guns in the field such as Cisco Systems Inc. and SynOptics Communications Inc.

Dayna said it has a philosophy to "stay out from the inside of people's wiring closets" and instead add value through easy-to-use software such as adapter drivers that can be updated on an entire network from a single Mac.

Farallon, which entered the adapter market last year and has struggled to get a foothold, is

"There's very little margin left in

Industry observers, however, claim Falcon's tense relationship with Apple might have prompted the agreement with GTSI. The relationship was reportedly aggravated this month when Falcon announced it would also carry products from Dell Computer Corp. (see MacWEEK, April 12).

Apple denied that Falcon's deal with Dell was a factor in its decision to sign an agreement with GTSI.

"Falcon made a business decision about the kind of technology it would carry," Clifton said. "We don't consider it a negative move. In fact, it's a healthy move. And the reality is that there are federal offices that also want to purchase DOS machines." □

Ethernet

From Page 32

from commodity areas and toward niches such as remote networking.

Others, such as Focus Enhancements Inc. of Woburn, Mass., which licenses adapters from Sonic Systems Inc. and sells them primarily through mail-order catalogs, jolted the market by introducing \$99 NuBus and Mac LC model boards this year. Competing boards cost more than \$200.

"Brand allegiance is a myth," said Craig Johnson, Asante director of product marketing. "It may not be as much a commodity market as everyone thinks, but price is No. 1."

Murmurs that inexpensive Korean chips are appearing on various vendors' boards has also kept anxiety high. Adapter vendors said the widespread use of "clone" chips will push prices further down and cause vendors that use National Semiconductor chip sets to accept slimmer margins to stay competitive.

"There's very little margin left in

putting its eggs in the cross-platform software basket. It is promoting Timbuktu as a peer-to-peer solution for smaller networks while continuing to introduce the necessary Ethernet peripherals (see story, Page 20).

According to Chip Pettirossi, LAN analyst at IDC, there are still sales to be made in Ethernet peripherals although commoditization will continue at the lower end of the market. "The card market is a mature market and there are significant price pressures at the low end of [the hub] market," he said. "One trend that hasn't changed is people are migrating from LocalTalk and doing it quickly." □

Drives

From Page 32

announced lower sales and profits for its third quarter ended April 2.

The Scotts Valley, Calif., company reported revenues of \$754.1 million, down 3 percent from \$779.9 million in the same quarter a year ago.

The company's profits, meanwhile, slipped 4 percent to \$39 million, compared with \$40.7 million last year.

► SyQuest Technology Inc. of Fremont, Calif., posted record sales, but escalating operating expenses took a bite out of profits.

SyQuest said revenues for its second quarter ended March 31 rose 20 percent to \$51.5 million. Profits, however, fell 2 percent to \$3.57 million because of an additional \$15 million in quarterly operating expenses.

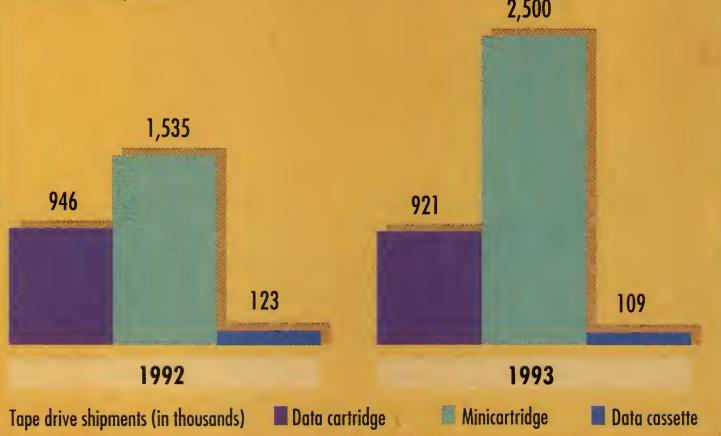
Despite the dip in profits, SyQuest recorded its 18th consecutive profitable quarter.

Maxtor Corp. of San Jose and Quantum Corp., based in Milpitas, Calif., are expected to announce their financial results this week. □

MacWEEK index

MINICARTRIDGE SHIPMENTS SOAR

Minicartridge tape drive shipments are expected to grow 60 percent to 2.5 million units worldwide this year because of declining prices and demand for increased capacities.



Source: Peripheral Strategies Inc.

Business

BRIEFS



All quiet on rumored RasterOps-Scitex merger front

Santa Clara, Calif. — RasterOps Corp. officials had no comment last week about a possible merger with Scitex Corp. But industry sources said the two companies have discussed pooling their resources in the competitive high-end graphics market.

RasterOps Chief Financial Officer Kent Robertson said RasterOps has had a "good, positive relationship" with Scitex for several years, but he stopped short of saying any merger agreement had been signed with the Israeli-based company. Robertson declined to say how many workers RasterOps has laid off as part of a recent reorganization, but he said the number was small. The company employs more than 350 people, including about 150 here and 100 at Truevision Inc. in Indianapolis.

Big Blue suffers big loss in first quarter

Armonk, N.Y. — IBM Corp. suffered a \$285 million loss for its first quarter, compared with a \$642 million profit for the same quarter last year. For the period ended March 31, the computer giant reported a 7 percent drop in revenues, to \$13.1 billion, compared with \$14 billion last year.

IBM Chairman Louis Gerstner blamed the poor results on weak demand and continued competitive pressures, particularly for mainframe computers and large disk drives. Gerstner, however, said demand for IBM personal computers, workstations and PC services remained strong.

Compaq's sales, profits double

Houston — Defying a fierce personal computer price war, Compaq Computer Corp. said sales and profits more than doubled for its first quarter ended March 31.

The computer maker reported sales of \$1.6 billion, compared with \$783 million in the same quarter a year ago. Profits increased to \$102.4 million, compared with \$45.3 million last year.

According to analysts, Compaq is selling PCs at five to seven times the industry's estimated growth rate, a level attained only by Dell Computer Corp. of Austin, Texas.

Apple expands in fast-growing Mexican market

Mexico City — Apple is increasing its push in one of the world's fastest-growing personal computer markets.

The company last week opened the doors to Apple Computer Mexico, a marketing and channel-development office that will also provide service and support to resellers, software developers and technology partners. Apple has four distributors in Mexico.

International Data Corp. of Framingham, Mass., estimates the PC market in Mexico will swell 29 percent to \$1 billion this year.



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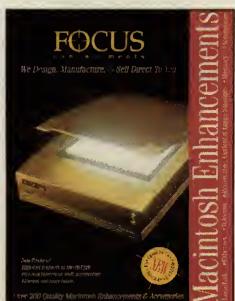
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EDITORIAL

Apple site licensing: A mystery story

Sometimes the way Apple conducts its business leaves even the most devoted company watchers scratching their heads. Case in point: the Apple Software Volume Licensing Program, the semisecret system-software site-licensing program disclosed in last week's MacWEEK.

Why the company is offering group licenses is no mystery: As in other industries, big customers demand volume discounts, and they don't want the overhead that purchasing hundreds or thousands of separate retail packages would entail. When it released System 7.0 in 1991, Apple offered a form of site licensing through its CD-ROM-based Group Upgrade Kit, and the case is all the more compelling now that most system software is no longer free.

What's puzzling about the Apple program is how it has been implemented:

► Why has it taken so long? Last October, Apple promised to announce multi-user pricing for System 7.1 by the end of November; more than six months later, there's still been no official announcement. In our view, the delay is

unforgivable, considering that some of the software covered by the program, such as the DAL Client and MacTCP, is mission-critical for some shops.

► Why the secrecy? The program has apparently existed, at least in part, since February, but information about it has been available only to selected sites. In the interim, other customers have been kept in the dark, and some have undoubtedly overpaid for needed software.

► Why mail order only? Why hasn't Apple also offered the program through dealers and value-added resellers, who could combine licensing with customized on-site upgrade and support programs?

► What about AppleTalk Remote Access? Ever since Apple unbundled ARA from the PowerBooks last year, demand for group licensing has been strong.

Apple should be doing everything it can to make life easier for managers committed to its technologies. Site licensing is an important step in that direction, but the company needs to stay on track and walk faster. □

Commentary

Let's talk about some numbers from Apple

Apple's numbers are out. Compared with the same time last year, sales are up, profits are down, and the stock barely budged. Sounds like business as usual. The market-share strategy keeps working, and margins keep declining, but they remain well above the ever-shrinking numbers typical of IBM PC clone makers.

As a result, Apple's stock seems to observe the same kind of status quo. The occasional spikes are but a testament to the everlasting need for financial markets to have something to hype, a need well fed by demos, introductions and the latest rev of the vision from Apple. But soon, the stock returns to the \$40-to-\$50 band where it has spent most of its time since the October 1987 crash.

On closer examination, however, Apple's latest results are a lot less routine than they seem. They, and comments made upon their release, raise a number of questions regarding the company's prospects.

Increase in units. One startling item is a 50 percent year-to-year increase in units shipped in the United States. This is a remarkable achievement. It doesn't say much about revenue, margins or even market share, considering the equally impressive growth in the PC industry last year. But it does show that, contrary to the dire predictions of loss of differentiation vs. Windows and of the resulting inexorable demise of the Macintosh, Apple products still enjoy demand in the marketplace.

A second question arising from the numbers concerns Apple's business in Europe. Sales there are stagnating and, in some areas such as France, regressing. The general business climate is worse than in the United States. But not everyone is suffering equally. Compaq Computer Corp. is having a banner year in Europe; in some areas shipment tonnage, which more or less parallels unit volume, has tripled. Apple Europe tried reorganizing itself and its distribution channel, but these moves haven't worked as well as expected and are now being re-examined.

Worldwide, Apple's margins have declined by about 10 points in the past 18 months, and there's no end in sight. Now that the courts have authorized Advanced Micro Devices Inc. to compete in the 486 arena, the PC price wars may intensify again. What this will do to Apple's margins is predictable; how well the company will be able to sustain this trend is

less so. So far, the company has managed with moderate cuts in staffing and expenses. Its ability to make more profound changes to its lifestyle could be tested in the future.

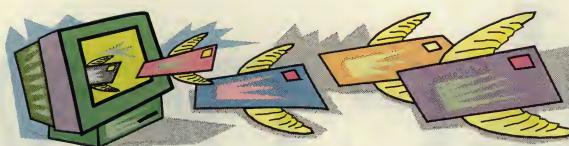


JEAN-LOUIS GASSÉE

Restoring margins. Could Newton and Apple's other personal digital assistants spell margin relief? Certainly not in the near term. Anything related to consumer electronics is likely to offer even lower margins than computer products. And for the time being, Apple's Personal Interactive Electronics division spends money at a typical Apple pace — fast and furious — and costs are likely to accelerate as real product introductions approach.

In the end, any real hope of margin relief is with Apple's core business. The latest Macs are convincing and could help. But the big bet is on the PowerPC. Fortunately for Apple, the hardware looks very good, even compared with the Pentium. Moving to RISC could give the company a real opportunity to increase its differentiation and translate it into higher margins. There remains only the matter of negotiating the transition to a new platform — a not so simple matter of software. □

LETTERS



MacWrite Pro quality control from Claris' vantage point

The letter from Dennis Geller, "MacWrite Pro scriptability raises quality-control concerns," (MacWEEK, April 12) questioning the "secretly included" support for undocumented Apple events in MacWrite Pro 1.0 deserves a response.

In addition to the minimum required Apple events supported by MacWrite Pro, the program incorporates other Apple-event technology upon which we can build in the future. Before shipping MacWrite Pro, we tested it fully. This included testing the events to ensure they would not "break" or cause problems with the currently supported functionality of the product. They are clearly high-end capabilities accessible only to the most advanced Mac user. If users of scripting tools such as UserLand Frontier 2.0 want to experiment with the additional Apple events, they can, and most will be glad they are available in MacWrite Pro today. With MacWrite Pro, Claris Corp. has delivered yet another full-featured, intuitive, quality product of which everyone is extremely proud.

Looking forward, the primary benefit of Apple events for most users will be scriptability through AppleScript. Claris plans to enhance MacWrite Pro to fully support AppleScript and enhanced Apple events in the future. The technology in MacWrite Pro of which Geller speaks serves as the basis for the evolution of the product — an investment in the future of both the product and our customers. It reflects the steadfast commitment to our users and the professionalism, quality and foresight of the development process here at Claris.

Graham Burrows, director
Text and graphics, product development
Sofie Plener, MacWrite Pro product manager
Claris Corp., Santa Clara, Calif.

MacWrite Pro printer bug sends user back to Word

The significance of the story "MacWrite Pro has a secret: Scriptability" (MacWEEK, March 22) was brought home to me when I received my new copy of MacWrite Pro. I liked the look and feel of the application. Everything was working great until I tried to print a document with footers and footnotes on my PLP II printer from GCC Technologies Inc. Instead of footers and footnotes, I got a blank space on my page.

After one hour of trying various options, including reading the user manual, I called Claris Corp. After waiting an interminable period (Claris needs to hire more support personnel), I spoke to a pleasant woman who said my printing problem was a known bug with QuickDraw printers. She told me that the problem would be corrected if I turned on background printing, then printed. I tried that,

but it didn't work either. In exasperation, I gave up and went back to using Microsoft Word.

Perhaps Claris' developer should have spent more time getting basic functionality into the product rather than trying to implement features that most people will never use. If this is the best Claris can do after a two-year delay, MacWrite Pro will soon join Resolve in the "too little, too late" hall of shame.

Thomas J. Rossi, Bellevue, Wash.

National paper's separations on hold only for color printer

The otherwise good story "Daily newspapers and the Macintosh" (MacWEEK, April 12) was marred by two errors concerning The Washington Post National Weekly Edition.

The story stated that the Weekly "hasn't pushed the project to full pagination (art is still sent through separately and stripped in in the engraving department)." In fact, almost all black-and-white art is scanned in and output on the page. Only color art, as a rule, is being handled as the story describes because the Post does not, as yet, have a printer capable of handling color.

The second error concerns our circulation. We are proud that we have 140,000 subscribers, not the 40,000 the story cited.

Lawrence Meyer, editor, *The Washington Post National Weekly Edition*, Washington, D.C.

Look to IEEE standards for accurate UPS definition

The story "Some UPS essentials: A guide to different types of power backup" (MacWEEK, March 22) perpetuates confusion about the proper definition of line-interactive uninterruptible power supply (UPS). The story stated, "Strictly defined, a line-interactive UPS is a standby UPS with an output transformer. ..." This is one of several definitions we've seen.

The IEEE Standard 1100-1992, Section 8.2.9.2 defines a line-interactive UPS as one of two types of static UPS that provide continuous, nonbreak power to protected loads during a power outage.

Many manufacturers in the power-protection industry have latched onto the term line-interactive as a way to charge more money for their standby power systems. But the real test is not whether a unit has an output transformer but whether it provides no-break power.

Scott Knickelbine, senior technical writer
Best Power Technology Inc., Necedah, Wis.

Send letters to MacWEEK, 301 Howard St., 15th Floor, San Francisco, Calif. 94105. MCI 323-1203; Internet, letters@macweek.ziff.com; fax (415) 243-3650. Include your name, address and phone number. Letters should not exceed 300 words. We reserve the right to edit for clarity and length.

The Mac Manager

Getting to the bottom of your electronic mail



DON CRABB

How many electronic-mail messages would you estimate you receive each day? My average is about 75 to 100 per day, seven days a week. They arrive in my in-box via AppleLink, MCI Mail, Internet, Compu-Serve, America Online, BIX and sources too obscure to list here.

That means if I miss reading my mail for even a day because I'm sick or I'm traveling and have no phone access, I'll have 100 or so messages waiting to be read and responded to in one way or another. Most of you have the same problem. Our E-mail traffic has grown steadily over the past several years to the point that it has become an onerous obligation just to scan it each day, let alone actively deal with it. And since a measurable portion of it is junk, we need a strategy to separate the wheat from all this chaff.

Evelyn Wood won't mind. First of all, be ruthless. You must fight the urge to read each message in detail and respond in kind. You simply must learn to speed read your E-mail.

The natural reaction most of us have to E-mail is to consider it a conversation. But it is not conversation. Doing so only extends the time needed to handle it. We have to remember that E-mail is just the fancy electronic version of those insidious paper memos we used to bury each other in. But the critical difference with E-mail is that we can inter ourselves more efficiently.

Approach your E-mail the same way you would approach browsing the magazine rack at your newsstand. Learn to scan the headlines and the topic sentences so you can decide if a piece of mail is something you must deal with.

Since much of the mail you receive each

day may have been sent to a group mailing list, make a point to determine from the start whether a particular message requires your attention. If you learn to get good at this speed-reading/skimming technique, you'll eventually figure out how to blow through your mail at three to five times the rate you're handling it now.

E-mail reciprocity. Next you should work on the second phase of improving your E-mail processing productivity: learning when to respond.

Although it might seem like a good idea that you respond to E-mail that specifically asks for a reply, doing so will really slow you down. Here's where your experience and judgment have to be tapped: When does a message really warrant you taking the time to respond?

Use a kind of E-mail triage system to help you make the decision. Consider the source of the message (is it from someone outside your company, a staffer, your boss, your boss's boss?), the apparent urgency of the message, and (this one is the tough one) your ability to actually give a cogent and effective reply. How many times have you replied to a message just to be friendly, even though you really had no substance to add? Doing so may be good manners, but it takes time away from direct interactions with the people who work for and with you.

I want to hear from you about how you're handling the E-mail explosion in your shops, if you've evolved personal strategies and are using any technology to help you cope. In future columns, I'll explore other aspects of this issue. □

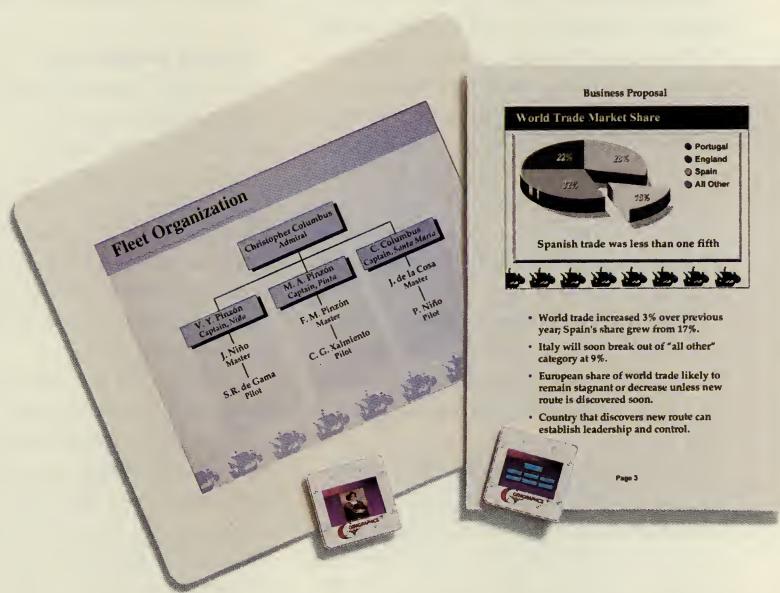


"Not yet! My PowerBook 180 is still on back order."

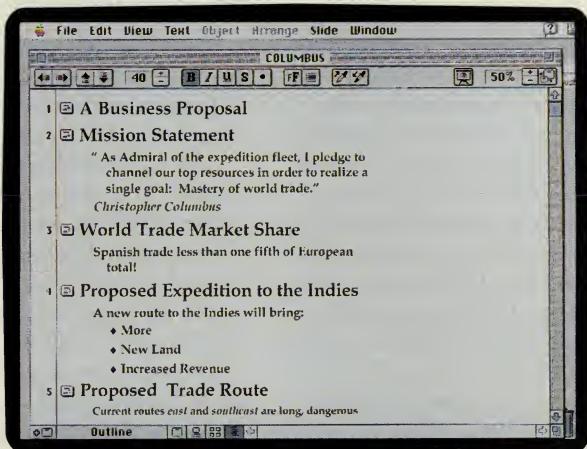
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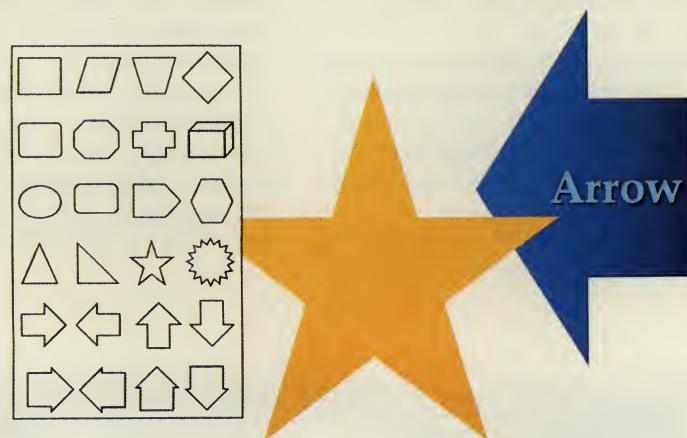
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Printers

With ever-improving printer technology comes the advantage of steadily decreasing costs of new equipment and the disadvantage of guaranteed obsolescence of your current gear. In this semiannual Special Report, MacWEEK examines the advances in 600-dpi, portable and PostScript printers that have pushed prices down to new lows. We also look at how you can get the most out of your old LaserWriter and PostScript clones.

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JOHN GREENLEIGH

New laser printing engines give high resolution at lower prices

By Bob Weibel

Until late last year, almost all printers sporting true 600-by-600-dpi resolution or better were priced at more than \$10,000. Now, thanks in large part to a new generation of laser engines from Canon U.S.A. Inc., many 600-dpi printers go for less than \$3,000.

Of course, a lot of 300-dpi PostScript printers are priced in the \$1,500 range, but many users are willing to pay more for sharper type and smoother tints and halftones. Also, printers based on Canon's LBP-BX engine offer a triple whammy: 600 dpi, tabloid-size printing and a low price.

In general, all tabloid-size 600-dpi printers now on the Mac market are PostScript

clones, in sharp contrast to the letter/legal-size models, which all feature PostScript interpreters licensed from Adobe Systems Inc. Still, whatever the mix of features, new 600-dpi models are hitting the shelves every month. Here are the hot new models priced at less than \$10,000, available at press time.

Letter/legal eagles. Apple wasted little time joining the 600-dpi trend, releasing the LaserWriter Pro 600 and Pro 630, based on the 8-page-per-minute Canon LBP-EX engine. Both the Pro 600 and 630 now incorporate FinePrint, Apple's edge-smoothing technology, and Apple's PhotoGrade gray-scale enhancement. However, FinePrint and Photo-

GgG

Grade can be used only in 300-dpi print mode.

Brian McCarthy, owner of McCarthy Advertising of Boulder, Colo., purchased the Pro 630 with finer type and gray scale in mind.

"There's quite a bit of photography in our pieces for local ski areas," McCarthy said. "I'm more confident showing 600-dpi type and gray scale to my clients."

McCarthy said that, partly because of the limits of 300-dpi laser printer quality, many clients don't like to review and make changes to an ad until they can see a more convincing version, often at the pre-press proofing stage. He said he believes more clients will be willing to work with the proofs from his Pro 630.

The 300-dpi LaserWriter Pro 600 is also based on the LBP-EX engine. In addition to the two paper trays (100- and 250-sheet trays are standard on Pro models), Apple provides an optional 500-sheet feeder and an optional envelope feeder.

The Pro 630 also has two SCSI ports, one for an internally mounted hard drive for font storage and a traditional external port. Apple also built an EtherTalk connection into the Pro 630.

Split personality. The first printer on the market to sport the Canon EX engine, the standard PC-oriented Hewlett-Packard Co. LaserJet 4 is also available in a Macintosh-compatible configuration, the LaserJet 4M.

Definitely dual-personality, the 4M incorporates Adobe PostScript Level 2 and a LocalTalk port while, of course, remaining as PCL 5-compatible as you can get. EtherTalk is optional, and no SCSI port is available.

Dr. James R. McCarty, a dermatologist based in Fort Worth, Texas, uses the LaserJet 4M to print forms and brochures for his practice. "I used to take everything to an image-setter bureau because 300 dpi wasn't sharp enough," McCarty said. "The LaserJet 4M has been the solution to this problem; I haven't had to go back to the service bureau since I bought it."

LP Baier Inc., a benefit administration company based in McLean, Va., uses Data-products Corp.'s LZR 965 to produce numerous and ever-changing forms. "I needed a higher resolution to produce better gray screens for form backgrounds," said President Rick Snyder. "Printed on bright white laser paper, it's almost phototypeset quality — definitely good enough for our purposes."

If print volume concerns you, consider the 10-ppm IBM LaserPrinter 4029 10A from Lexmark International Inc. Book author Roger Elwood of Agoura Hills, Calif., uses four LaserPrinter 10A printers for gang-printing lengthy manuscripts.

"Ten pages per minute really makes a difference," Elwood said. "Together they're faster, cheaper and more reliable than a single 20-ppm printer, like the QMS Model 2000." Elwood also said he feels his IBM printers produce darker, crisper and more readable text than the LaserJet 4M at the speed he needs. Unlike all other printers in this survey, the 10A lacks serial and parallel connections for attaching to IBM PCs and compatibles.

To the tabloids. The Canon LBP-BX engine has brought tabloid-size page printing to less than \$4,000. That price breaker is the Xante Corp. Accel-a-Writer 8100, at \$3,995. MacPac Communications, a desktop publish-

See 600 dpi, next page

Printing on the road: Have type, will travel

By Charles Rubin

Portable printers seem a natural part of the equation for a PowerBook-based mobile office. Small, light and battery-powered, these printers can deliver first-rate copy in conference rooms, hotel rooms or even on airplanes.

But while on-the-spot printing has distinct advantages, using a portable printer involves some compromises. Before you add a few extra pounds to your portable computing setup, you'll want to weigh these issues against the benefits of portable printing in

your particular situation.

The original portable printer for the Mac was the Diconix 150M from Eastman Kodak Co. An inkjet device first introduced in 1989, it fits in a briefcase and weighs less than 3 pounds, including

batteries. GCC Technologies Inc.'s WriteMove I was essentially the same printer.

A descendant of that printer, the Diconix 180si, remains on the market, and it is still among the lightest of portables, but its 192-dpi print quality puts it a step behind newer models. Last year, GCC introduced its WriteMove II, which uses a thermal-transfer ribbon to deliver 360-dpi resolution.

This year, Kodak introduced a Mac interface kit for its Diconix 701, an inkjet model with 300-dpi resolution, and Mannesmann Tally Corp. announced the MobileWriterPS, a PostScript-compatible portable that provides 300-dpi print quality and is shipping now.

Another issue is font compatibility and selection. The original Diconix portable offered only a few fonts in fixed sizes, while the WriteMove I relied on GCC's implementation of Bitstream outline fonts. In contrast, the WriteMove II and the MobileWriterPS can use both TrueType and PostScript fonts (via Adobe Type Manager in GCC's case).

But while the newer GCC and Mannesmann Tally printers offer full font compatibility and better resolution, they have their disadvantages as well.

The inkjet cartridges on the Diconix and WriteMove II models can print about 500 pages, while the single-strike thermal ribbons on the WriteMove II and MobileWriterPS conk out after 15 pages or 150 pages, respectively.

Although the WriteMove II can use multi-strike ribbons that recycle a few times and, thus, last longer, the print quality deteriorates quickly after the first ribbon pass.

If ribbon life seems short, battery life is no better. The WriteMove II's batteries are good for only 12 to 15 pages; the Diconix 180 and 701 can produce about 50 and 100 pages,

See Portables, Page 43



Portable printers weigh in: The 2.5-pound WriteMove II from GCC Technologies and the 8.3-pound MobileWriterPS from Mannesmann Tally are shown above. Hewlett-Packard's 600-dpi LaserJet 4si is shown on the opposite page.

JOHN GREENLEIGH

600 dpi

From previous page

ing company in Hollywood, Fla., uses the 8100 to kick out camera-ready art for the biweekly tabloid magazine Medical Business.

"After comparing prices of other 600-dpi printers, we decided to go with Xante," said MacPac President Dannielle Kukar. "The 600-dpi print quality of the 8100 is wonderful." Previously, Kukar had faced the time and expense of sending out QuarkXPress files for 1,270-dpi photo-imagesetting.

Like other Accel-a-Writer models, you can install 512 Kbytes or 1 Mbyte of optional flash memory to permanently store fonts in the 8100.

MacPac opted for the \$200 1-Mbyte flash-memory upgrade, which it finds very handy, according to Kukar. You can also upgrade the 8100 to provide higher resolutions, equivalent to 800, 960 and 1,200 dpi.

CalComp Inc.'s CCL-600 isn't quite as good a deal because it comes with only 4 Mbytes of RAM, although it's shipping with 16 Mbytes as an introductory offer.

Network tabloid printing. For a few dollars more, the 860 Print System from QMS Inc. offers 600-dpi tabloid printing via the LBP-BX engine and the flexible network-connection, emulation-switching and font-management features of the QMS multi-tasking Crown architecture.

As personal computer hardware support manager for the Princeton Theological Seminary in Princeton, N.J., Bob Miller chose the 860 for both price and workgroup flexibility. For its networked printing and desktop publishing hardware, the seminary needs reliable emulation switching and font management because documents are produced in several languages.

"QMS emulation switching and job spooling are superior," said Miller, who also plans to add a QMS 1725 Print System 17-ppm workhorse to the network. The 860's 600-dpi tabloid output suits most of the seminary's publications.

"I have a lot of confidence in the type," Miller said. "We were looking at some more-expensive 1,200-dpi printers, but the differ-

Resolution confusion: What is 'true' 600 dpi?

Some PostScript printers have featured 600-dpi resolution and beyond for several years, so why the excitement over the new 600-dpi engines?

For one thing, vendors of those early, low-priced, high-resolution printers didn't always make it clear that they could only emulate higher vertical resolution beyond the 300- or 400-dpi limit of earlier printer engines such as the Canon SX.

That's because vertical resolution depends on the rotation of the printer drum, which was accurate only to one-three-hundredth or one-four-hundredth of an inch increments. Special laser beam modulation techniques, sometimes called interline scanning, are used to compensate somewhat for the mechanical limitation.

The new, relatively inexpensive Canon BX and EX engines can now rotate the drum in one-six-hundredth of an inch increments, achieving 600 by 600 dpi without playing any games. Hence, they're referred to as "true" 600-dpi engines. Improved optics combined with finer and more uni-

form toner particles help guarantee the smaller dot size required for true 600-dpi resolution.

Still, some printers that use true 600-dpi engines offer or can be upgraded to "1,200 dpi," "800 by 800 dpi" or "960 by 960 dpi." Once again, they're using laser modulation to achieve higher resolution, or at least perceived resolution, especially in the critical vertical resolution.

Aside from viewing print samples, another way to compare resolution claims is to ask what "frame buffer" the printers use. If a vendor advertises "1,200 dpi," does that mean that a 1,200-by-1,200-dpi image is stored in printer page memory prior to hitting the page, or is it stored as a 1,200-by-600-dpi image?

The former requires more RAM, indicating higher printer value and perhaps visibly sharper images.

All of these higher-resolution techniques push the basic capabilities of each engine type, and the visible results may or may not strongly reflect the extra effort. — By Bob Weibel

ence in quality between the 600 and 1,200 wasn't worth the money for us."

When the Daily Herald newspaper, published in Arlington Heights, Ill., wanted a backup for its \$23,000 Varityper Inc. VT600W, it chose NewGen Systems Corp.'s \$4,995 TurboPS/660 B.

"Speedwise, it's much faster than the Varityper," said Robert Finch, graphics editor at the Daily Herald. "The type seems to be a tiny bit thinner, which I think is more consistent with the actual typefaces, and gray screens are better than those of the Varityper."

Both the TurboPS/660 B and the 1,200-by-600-dpi version, the TurboPS/1200 B, accept NewGen's Ethernet interface, which automatically switches among built-in EtherTalk, TCP/IP and Novell NetWare 3.11 protocols, making the printer accessible to Macs, Unix workstations and PCs.

At \$9,995, LaserMaster Corp.'s Unity 1200XL is the most expensive low-end 600-dpi printer. According to the company, LaserMaster chose the 600-dpi, tabloid-size Toshiba TN-7270 print engine because it produced

more consistent grays over extended areas.

The Unity 1200XL's PostScript-compatible interpreter and 135 built-in Type 1 fonts reside on an internal 20-Mbyte hard drive, which has room for about 200 additional fonts.

For John Batis, owner of Columbine Printing in rural Taos, N.M., the Unity 1200XL replaced his Compugraphic typesetting system when its lease expired.

"Since I do a lot of art reproduction and process-color work for the Santa Fe/Taos art market, I needed something good enough for my medium-quality work but which offered a good proofing system for the high-end work I do," Batis said.

Batis said the added benefit of the Unity 1200XL has been the excellent toll-free technical support he's received from LaserMaster, which is important because of his remote location. LaserMaster also sells the \$6,995 1200XL, which relies on a controller on a NuBus card in the host Mac but can be shared via EtherTalk.

David Ruppe, owner of Impact Publishing, a design company in Ashland, Ore., looked at the Unity 1200XL but recently settled on another printer based on the Toshiba TN-7270 engine, the 600-dpi SelectPress 600 from GCC Technologies Inc.

"The big selling points for us are the low price, the edge-to-edge printing on tabloid pages and the built-in 40-Mbyte hard drive," Ruppe said. GCC made some hardware changes, through Toshiba, that allow you to print all the way to the left and right borders of a page. According to the company, you can print to within 5 millimeters of the leading and trailing page edges without any problem.

Price and convenience. Although true 600-dpi laser printing isn't new, the low prices and convenience offered by the latest engines are.

It's only fair to mention that Printware Inc.'s letter/legal-size Professional-II was one of the first to break the \$10,000 mark, and although it is no longer inexpensive compared with Canon-based printers, its heavy-duty engine rates a 20,000-page-per-month duty cycle that still can't be beat.

Whether you're trying to print better-looking halftones at your desktop or save yourself the expense of PostScript imagesetting, you've never had better or cheaper options. □

How 600-dpi printers compare

PRINTER MODEL	PRICE	PAGES PER MINUTE	BUILT-IN RAM (IN MBs)	MAXIMUM PAPER SIZE	MAXIMUM VERTICAL RESOLUTION	EXTERNAL SCSI PORT	BUILT-IN HARD DISK
Apple LaserWriter Pro 630	\$2,529	8	8	legal	600x600	•	
CalComp CCL-600	\$3,995	4*	4	tabloid	600x600		
Dataproducts LZR 965	\$2,445	9	8	legal	600x600		
GCC Technologies SelectPress 600	\$4,499	4*	8	tabloid	600x600		•
Hewlett-Packard LaserJet 4M	\$2,399	8	6	legal	600x600		
Lexmark LaserPrinter 4029 10A	\$2,499	10	5	legal	600x600		
LaserMaster 1200XL	\$6,995	4*	21	tabloid	1,200x600		
LaserMaster Unity 1200XL	\$9,995	4*	21	tabloid	1,200x600		
NewGen TurboPS/660 B	\$4,995	4*	12	tabloid	600x600	•	
NewGen TurboPS/1200 B	\$5,995	4*	20	tabloid	1,200x600	•	
Printware Professional-II	\$7,990	8	12	tabloid	1,200x600		•
QMS 860 Print System	\$4,595	4*	12	tabloid	600x600	•	
Xante Accel-a-Writer 8100	\$3,995	4*	12	tabloid	1,200x1,200	•	

* The Canon LBP-BX engine used in this printer is rated at 4 ppm when printing tabloid sheets and 8 ppm when printing on letter-size paper.

Portables

From Page 41

respectively; and the heavier Mannesmann Tally model can power itself for 150 pages. Batteries for these printers add up to half a pound to their total weight, so many users rely on AC power adapters instead.

Hard-copy hotel. Despite the compromises of portable printing, there's a lot to be said for having quick output on the road. Arthur Greenwald of Arthur Greenwald Productions in Arlington, Mass., uses a PowerBook 170 and a GCC WriteMove II to print scripts and proposals for his television advertising and production business.

"I can crank out a quick, laser-quality proposal on my letterhead from my hotel room and send it off by overnight express. Being able to get a proposal on the customer's desk the next day has won a lot of business for me."

— Arthur Greenwald

laser-quality proposal on my letterhead from my hotel room and send it off by overnight express. Being able to get a proposal on the customer's desk the next day has won a lot of business for me."

Greenwald started his mobile computing setup with a Macintosh Portable and a GCC WriteMove I, so the lighter PowerBook and higher-quality WriteMove II have been a decided improvement. "The new printer is about as big as a roll of tinfoil," he said. The printer, AC adapter, extra ribbons and his business letterhead all pack in an airline carry-on along with his PowerBook.

Graduating from the 192-dpi WriteMove I has also expanded Greenwald's uses for his

"It's tremendous to be able to print something on the spot or at night in my hotel room," he said. "I can have revised documents ready to show a client first thing the next morning, so I can get feedback immediately."

The printer also helps Greenwald respond to new business opportunities more quickly. "I can crank out a quick,

Remote printing lets users lose luggage, keep up with business

For some PowerBook users, the best portable printer is no printer at all. Dan Siegel, an attorney for the Menlo Park, Calif., office of the New York-based firm of Weil, Gotshal & Manges, takes his PowerBook 180 to client offices wherever he goes, but he attacks the printing problem by transmitting his files to printers or fax machines.

Much of his remote printing is done to printers back at the office. Using a fax modem from Global Village Communication Inc. on his PowerBook, Siegel calls his Menlo Park office and taps into the office's Ethernet network via a Shiva Corp. NetModem/E, although anyone using AppleTalk Remote Access could also accomplish the same thing.

"I call in from home, or clients' offices, or from out of town when I need to print something at the office that someone else needs to work with," Siegel said. "Often, I have one document on my PowerBook but there are others at the office that need to be sent out with it."

Siegel prints the document to one of the firm's five network printers, and then a secretary combines it with other documents and a fax cover page for transmittal to another location.

For example, he said, "I recently got an E-mail document on a weekend, and I printed it out at the office on a printer that's next to the desk of the secretary who would work on it. When she came in Monday, the document was right there, along with instructions with what to do with it."

Although he travels extensively, Siegel hasn't found the need for a portable printer. "When I'm at a client's office and they have Macs," he said, "I'll use one of their printers. Otherwise, I'll just fax a document to my location. There's typically a fax machine almost everywhere I go, so I'll use the fax modem to fax a document to that machine, and then I have my hard copy. If it's a plain-paper fax, the print quality isn't that much worse than with a portable printer."

— By Charles Rubin

portable printer. With its single-strike ribbon, he said, "The quality is good enough that we've printed video titles on paper and then scanned them into a video editor for production." When draft quality will do, he uses the multistrike ribbon.

As for battery-life problems, Greenwald hasn't encountered them because he doesn't use battery power. "The only situation where I don't have AC power is on an airplane," he said, "and I've never been able to get much work done on those tray tables anyway."

Contracts on the fly. Networking consultant Dorian Cougis, director of network technology for Bear River Institute in Berkeley, Calif., has tried several portable printing solutions because having his own printer on hand makes consulting assignments go more smoothly.

"When you're in a meeting and you have a PowerBook and your own printer sitting right there, you can make decisions, print up an

agreement, have some copies made and get the agreement signed on the spot," he said.

Even when he's not making a deal, Cougis takes a portable printer along because trying to use the client's printers has caused friction in the past. "You can interfere with the normal flow of work at the office," he said. "When you're printing a 20-page document on the boss' secretary's printer, and she's waiting for a memo to come out of the same printer, it's not a great situation."

When Cougis first switched to portable printing, he used a Diconix 180si or sometimes carried an Apple StyleWriter with him.

Now, he uses a GCC WriteMove II, but he's not entirely satisfied. "It's slow, and you can't get ribbons for it," he said. "It's impossible to find a replacement ribbon when you're on the road, and I even have trouble getting them here in the [San Francisco] Bay area. I went to GCC's booth at the Macworld show last January, and then I went to every vendor who was selling the WriteMove II, and nobody had a single-strike ribbon for it."

Another portable-printing disadvantage is the WriteMove II's single-sheet feeder. "You have to feed pages one at a time," Cougis said, "and you have to click an OK button in the print driver's dialog box after you load each page. It's really a pain." The newer Diconix 701 and MobileWriterPS solve this problem with larger sheet feeders.

Portability is relative. If your application doesn't require battery power, you might also consider other compact printers that don't have a battery power option, such as Apple's StyleWriter II or Canon U.S.A. Inc.'s Bubble Jet.

Although the StyleWriter is more than twice as heavy as the WriteMove II, it has its own paper feeder and doesn't suffer from ribbon life or availability problems.

Your particular application and degree of mobility will determine how you evaluate weight, price, output quality, ribbon life and resolution in your printing equation. But with the PowerBook's success in the business market, the range and quality of portable printing solutions is bound to grow. □

How portable printers compare

NAME	KODAK DICONIX 180SI	KODAK DICONIX 701	MANNESMANN TALLY MOBILEWRITERPS	GCC WRITEMOVE II
Print technology	Inkjet	Inkjet	Thermal transfer	Thermal fusion
Maximum resolution (dpi)	192x192	300x300	300x300	360x360
Prints on transparencies?	No	No	Yes	Yes
Font families/sizes	3/6	4/10	11/35	6/21
PostScript compatible?	No	No	Yes	No
TrueType/ATM compatible?	No	No	Yes	Yes
Weight with battery	3.5 lbs	5.9 lbs.	8.3 lbs	2.5 lbs
Weight without battery	2.9 lbs.	5.6 lbs.	n/a**	2.0 lbs.
Cartridge/ribbon life	500 pages	800 pages	150 pages	75 pages*
Battery life (continuous printing, best quality)	50 pages	100 pages	150 pages	12-16 pages
Sheet-feeder capacity	1 page	30 sheets	80 sheets	1 sheet
Price	\$329	\$558***	\$999	\$599

*With multistrike ribbon. **Battery required for operation. ***Includes \$79 interface kit.

PostScript printer prices sink to lowest level ever

By Larry Stevens

If you ran out and bought one of Apple's original PostScript LaserWriters, you probably paid \$6,996. If you were patient enough to wait until about 1990, you got the same functionality from Apple for about \$3,000 and from third-party vendors for about \$300 or \$400 less.

Now for the first time, you can get PostScript-quality printing along with reasonable speed for less than \$1,000. And perhaps the biggest surprise of all is that the downward trend is not being lead by third-party Young Turks but by three stalwarts: Apple,

Digital Equipment Corp. and Texas Instruments Inc.

In February, Apple introduced two 5-page-per-minute printers, each priced under \$1,100 and expected to carry less-than-\$1,000 street prices. The low end is the QuickDraw-based LaserWriter Select 300, which will retail for \$819.

The most expensive model in this group is the PostScript-based LaserWriter Select 310, for \$1,079, which comes standard with 13 scalable Adobe PostScript Type 1 fonts. The 310 includes PhotoGrade enhancement software.

Last fall, DEC introduced the DEClaser 1152, a 4-ppm, 17-font PostScript printer. As of this writing, it retails for \$999 (after a manufacturer's rebate).

The DEClaser 1152 includes some features not found on Apple's printer, including PostScript Level 2 and automatic switching between PostScript and HP PCL 4 protocols.

The final entry in this new low-end market is Texas Instruments' MicroWriter 17, which dealers are now offering for less than \$1,000. This is not actually a laser printer since it uses LED technology. But output quality and performance are the same as in laser printers.

The MicroWriter 17 has 17 fonts and prints 5 ppm. It also features PostScript Level 2 and automatic switching.

Micro-prices printer. According to Marco Boer, senior analyst with market research company International Data Corp. of Framingham, Mass., these new products, especially Apple's and DEC's, represent the manufacturers' wish to garner the low-end market.

"With prices like these, third-party players are going to have a hard time," Boer said. "Apple's and DEC's brand recognition should allow them to demand a premium."

Boer points out that Apple was able to set such a low price in part by using a Fuji Xerox engine instead of a Canon engine and by installing PostScript Level 1 instead of Level 2. Despite this "de-featuring," most experts said that considering current component prices, there isn't much room for printer makers to cut prices further.

"I don't think they can make money at that price point — we know how much those engines cost," said Donald Parker, executive vice president of products and technology at QMS Inc., which sells midrange laser printers.

Boer agreed. "Apple is used to making a comfortable profit margin on its products. It won't be able to do the same — if it makes a profit at all — with the new printers," he said.



PHOTO BY JOHN GREENLEIGH; ILLUSTRATION BY GARY JAEGER

The LaserWriter Select 300, one of Apple's least expensive PostScript printers, lists for \$819.

Users the winners. The big winners in this grab for the low end are users, many of whom may no longer have to settle for non-PostScript laser printers.

"As far as I'm concerned, there's nothing low end about it," said George Walther, professor of information systems at the University of Mary Hardin-Baylor in Belton, Texas, and a beta tester of the TI MicroWriter.

Walther, who does "light" desktop publishing as well as general correspondence, said the MicroWriter's performance and functionality are equal to or better than his older and more expensive laser printers.

While Walther said he realizes that there are some differences between the MicroWriter and present-day midrange laser printers, he insisted "none of those differences has any affect on the way we work." □

Alternate low-cost printer technologies

Laser printers represent the dominant technology for black-and-white printing. But lower-cost technologies still have their place.

Laser printers are, for general purpose, black-and-white printing, the most popular option. They are fast and provide excellent output on many different kinds of media.

However, primarily for reasons of economy, two other printer technologies, dot matrix and inkjet, still attract some users.

Dot-matrix printers. Because dot-matrix printers are slow, noisy and generally produce low-quality output, inkjet and QuickDraw laser printers are nudging them out of the low end and into the dust heap of history.

Still, dot-matrix machines offer two advantages over other technologies: They can print on multiple forms, and you can pick one up, new or used, for a song. Used Apple ImageWriters are hard to find at dealers, but when available, they cost about \$150.

If you want to benefit from the low cost of dot-matrix printers and need relatively good-quality output, you can turn to the DOS world. A number of DOS dot-matrix printers, including some from Epson America Inc. and Panasonic, have resolutions of 360 dpi — equal to that offered by laser or inkjet printers.

To connect a Mac to a DOS printer, you need a cable that translates the Mac's serial output to the DOS printer's parallel input. And since you won't be able to install the printer's DOS-based driver in your Mac's System folder, you'll need some alternative means of controlling the printer.

Grappler II from Orange Micro Inc. of Anaheim, Calif., is a cable that not only translates serial signals to parallel signals but also translates ImageWriter commands into code that can be understood by dozens of DOS-based printers. As a result, the Mac can control the printer using Apple's ImageWriter driver.

PowerPrint from GDT Softworks Inc. of Burnaby, British Columbia, provides a serial-to-parallel cable plus a number of print drivers. According to GDT, the PowerPrint driver will allow the Mac to print on more than 1,000 different printers.

Inkjet printers. Inkjet printers work by spraying a microscopic stream of ink from the print head. They're quiet, and under ideal conditions that include low humidity and good-quality paper, their output is about as good as that produced on laser printers. But they are slow, printing from one-half to 1 page per minute.

Still, for about the price you had to pay for an ImageWriter just one year ago, you can now buy an inkjet printer that provides near-laser-quality output. Keep in mind that to approach laser-quality output, inkjet printers require a good (and expensive) grade of paper.

Apple's 360-dpi StyleWriter and Hewlett-Packard Co.'s 300-dpi DeskWriter are the two major Mac inkjet printers.

If portability is important, Eastman Kodak Co.'s Diconix series inkjet printers are lightweight and run on batteries. The Diconix 701 has 300-dpi output, and the Diconix 180si outputs at 192 dpi. — By Larry Stevens

What you're giving up

The new crop of near-\$1,000 printers provides a level of functionality and performance adequate for many small- to medium-size business users.

However, when opting for a low-priced printer, you should know what you're not getting as well as what you are getting. While the low price of these printers is good news, here's what the vendors had to leave out.

Speed. Digital Equipment Corp.'s DEClaser 1152 is rated at 4 pages per minute, and Texas Instruments Inc.'s MicroWriter and Apple's LaserWriter Select series are rated at 5 ppm. Many newer midrange machines print from 8 to 16 ppm.

Number of fonts. The DEClaser 1152 and MicroWriter 17 come standard with 17 Adobe PostScript fonts; the LaserWriter Select has 13. Higher-priced machines typically come equipped with 35 or more fonts.

Duty cycle. Duty cycle is the recommended maximum number of pages per month a printer should produce before its longevity is diminished. The DEClaser 1152 has a duty cycle of 6,000 pages; the MicroWriter is rated at 5,000. (Apple hasn't released duty cycle figures.) More expensive machines have duty cycles of 10,000 or more pages per month.

Paper tray size. The DEClaser 1152 and MicroWriter 17 have 250-sheet trays. Many midrange machines have trays with double that capacity. (Apple will offer an optional 500-sheet tray in its LaserWriter Select series.) — By Larry Stevens

Does this remind you of your system folder?



Are you the sort
of person who
accumulates fonts, DAs and
sounds as though they were going
out of style?

If you are, then your system
folder is as crowded as this closet.

And almost as organized.

Which is no great prob-
lem, as long as you don't
mind scrolling through
menus that disappear off
the bottom of your screen.

But if you think scrol-
ling is for Ancient Greeks,
it's time you did what over
250,000 people have done
before you.

Get out of the closet.
And get into Suitcase™.

Suitcase is the award-
winning utility that makes
it easy to sensibly organize
and promptly access your
rapidly growing collection
of fonts, DAs, FKEYs and
sounds.

Which means you can
spend more time using
them and less time—a lot
less—rummaging around
looking for them.

You'll also spend a lot
less time accessing new
fonts from within applica-
tions—especially if you
have System 7.

Because System 7 still makes
you quit and re-start your
applications before
you can use a fresh
font.

Suitcase doesn't.

And System 7 hasn't
got a clue about
which fonts you were

using during your last session.

Suitcase does. And loads them
for you automatically the next time
you switch on your Mac.

You can pack each suitcase with
just a single font or as many as
800 of them, up to 64 DAs or any
number of FKEYs and
sounds.

You can also group
suitcases into sets, then
summon all the luggage
that belongs with a parti-
cular project at the click
of a mouse.

Tips are optional. But
here's one for those who
have neither the time nor
the patience for resolving
font ID conflicts.

Get Suitcase. It elimi-
nates them. Along with a
lot of wasted disk space.

That's right, Suitcase
compresses your screen
font and sound files by as
much as 60%.

It even lets you park
your screen and printer
fonts on a server for all to
share, making each disk on
the network that much
more spacious.

Like all Fifth Generation
products, Suitcase is
backed by our one-year
money-back guarantee

and our vaunted 24-hour toll-free
customer support.

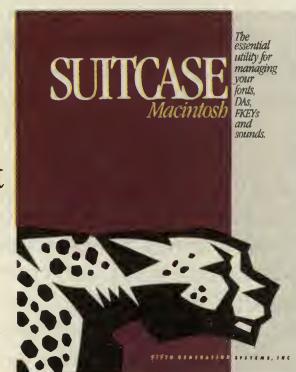
Finding out more
about Suitcase is also
toll-free. So pick up
the phone and dial
1-800-765-8209.

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Housekeeping.

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Alison
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Bodoni
Bookman
Caledonia
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✓ <i>FractScript</i>
Futura
Galliard
Garamond
Helvetica
Italia
Janson
Kabel
Los Angeles
Lubalin Graph
Lucida
✓ MACHINE
Monaco
New York
Optima
Palatino
✓ San Francisco
Times
Trump
Univers
Versailles



*Can't
remember the
difference between
Versailles and
Monaco?
Not to worry.
Suitcase displays
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LaserWriters get a second wind with variety of upgrade options

By Bob Weibel

Your Macintosh office keeps expanding, and suddenly that mighty LaserWriter you purchased a couple of years ago doesn't seem to be pulling its weight. Perhaps you can't download all the fonts you're using. Maybe it's stalling on your new page designs.

Sure, someday you'll need a new printer, but in many cases you can forestall the inevitable by upgrading your existing LaserWriter model with more RAM, a faster processor and expanded paper-feed options.

RAM is good. Upgrading your LaserWriter's memory gives you more room for manually downloaded fonts. Also, because PostScript Level 2 can dynamically allocate memory, that extra RAM will help crunch complex print jobs.

There are different RAM upgrade options for the various LaserWriter models, from both Apple and third-party memory suppliers. According to experts, many mail-order Macintosh memory vendors can recommend and supply the correct memory options for most LaserWriter models.

Memory upgrade kits from Apple are definitely more expensive than taking the do-it-yourself, mail-order route, although Apple's pricing does include installation at authorized service centers (see story, right).

Brain transplant. Another way to put more punch into an aging LaserWriter, at least for some models, is to spring for a controller upgrade.

Your LaserWriter SC, IINT or IINTX, for example, can enjoy new life as a II or IIg via Apple's \$1,015 II 4-Mbyte controller board or the \$1,455 8-Mbyte IIg controller board, which also upgrades a II to a IIg. Apple's \$989 Personal LaserWriter NTR controller trade-in will raise a Personal LaserWriter SC or NT to a RISC-based NTR.

Xante Corp. offers a range of Accel-a-Writer, RISC-based, PostScript-compatible controller upgrades for most LaserWriter models, including the LaserWriter and LaserWriter Plus. Priced at \$1,195, these boards add up to 16 Mbytes of RAM, 600-dpi resolution enhancement, SCSI ports, gray-scale enhancement and automatic port switching.

Guy Pacot, graphic designer for Copy Copy of Frisco, Colo., said he was initially skeptical of Xante's speed claims, but he's not anymore. "It would take our IINT 25 minutes to print a particular document for a frequent customer," Pacot said. "Now with our Accel-a-Writer II upgrade, it prints in four minutes."

Paper chase. In printing bills and letters on its LaserWriter Plus, sometimes 500 at a time, the staff of the cardiology department at Children's Hospital in Houston quickly tired

of refilling the printer's 200-sheet paper tray.

According to Kevin McCormick, the hospital's computer-repair technician, a \$495 Jet-Tray 1500 single-bin sheet feeder from Genesis Technology solved the problem. "It's a simple plug-and-play unit," McCormick said. "Attach the power cord, and that's it."

As a technician, McCormick said he appreciates the Jet-Tray 1500's reliability. Two available models work with most Canon-engine printers. Gradco (USA) Inc. sells the HCF-1000, compatible with LaserWriter II models.

Mat Ghoudjian, national director of technology for the law firm of Howrey & Simon in Los Angeles, favors multibin sheet feeders from BDT Products Inc.

"For our various LaserWriters, we use BDT's six-bin feeders, which we load with letterhead, second-page, plain bond, legal papers and

envelopes," Ghoudjian said. "Some of our staff would fight if you tried to take away their feeder," he said, because they find them so convenient and reliable. Each paper bin holds 220 sheets, and the envelope bin holds 50 envelopes.

Font cards. For only \$129, you can add 25 additional Adobe PostScript Type 1 fonts to the 35 built into your LaserWriter IINTX.

FontCard NTX from Sonnet Technologies Inc. plugs onto the IINTX controller board and includes ROM versions of Adobe Garamond, Helvetica Light, Helvetica Black and other assorted PostScript typefaces.

Jeffrey Schimsky, graphics coordinator for the Senn-Delaney Leadership Group consulting firm in Long Beach, Calif., found the FontCard easy to install.

"If I use Helvetica Black in a 50-page document, a lot of time is spent automatically downloading the font, unless I use a utility to manually download fonts," said Schimsky, who prefers not having to think about font downloading. "Now it's just like using Avante Garde or any other built-in font."

The moral of the story is that if your LaserWriter isn't keeping pace, stop complaining and consider an upgrade or even two. That way, your initial investment may start paying off in new ways. □

To get a little more power, all you need is a little more RAM

Each printer has different RAM capabilities. Whichever way you go, here's what to ask for, starting with the latest models.

► **LaserWriter Select 310, 300:** The 310 ships with 1.5 Mbytes soldered to the logic board. A single 72-pin SIMM socket accepts a 1- or 4-Mbyte 80-nanosecond SIMM, which will max out at 5.5 Mbytes. These new 72-pin SIMMs are also referred to as "interleaved memory."

The 300 has only half a megabyte on the motherboard, which is expandable to 4.5 Mbytes using standard Mac 30-pin 1- or 4-Mbyte SIMMs. Apple's 1-Mbyte upgrade kits for the 300 and 310 cost \$89 (parts #M2078G/A and #M2093G/A, respectively), while the 4-Mbyte upgrade for the 310 costs \$269 (part #M2094G/A); installation at an Apple-authorized service center is included for both.

► **LaserWriter Pro 600, Pro 630:** These new LaserWriter models both sport two 72-pin SIMM slots, and most of them have shipped with one 8-Mbyte SIMM installed, although a few may contain two 4-Mbyte SIMMs, according to Apple.

When you are shopping for mail-order RAM, technical staff at Technology Works Inc., a mail-order chip vendor in Austin, Texas, suggests you ask for 70-nanosecond or 80-nanosecond Bi-32 72-pin SIMMs, in densities of 4 Mbytes (\$149), 8 Mbytes (\$289) or 16 Mbytes (\$599). Commodity RAM prices fluctuate quickly, so these prices are approximate.

You can mix SIMMs of different densities to get the configuration you want. For example, if you pop a 4-Mbyte SIMM next to the 8-Mbyte SIMM, you'll total 12 Mbytes. By adding two 16-Mbyte SIMMs instead, you can increase these printers to the 32-Mbyte maximum RAM memory.

► **LaserWriter II, IIg:** These printers have two banks of SIMM slots, four slots to a bank. The II ships with 4 Mbytes, although it originally came with 2 Mbytes, using eight 256-Kbyte SIMMs.

The IIg now ships with 8 Mbytes, although it originally shipped with 5 Mbytes, using four 1-Mbyte and four 256-Kbyte SIMMs. To expand, you must add standard Mac SIMMs, either four 1-Mbyte or four 4-Mbyte SIMMs to a bank, for a maximum of 32 Mbytes. However, according to experts, you can't mix RAM densities within a single bank.

► **Personal LaserWriter IINT:** This printer shipped with 2 Mbytes in two SIMM slots. According to Paul Marto, product manager of Memory Direct, a RAM vendor in Huntington Beach, Calif., you can replace the two 1-Mbyte SIMMs with two 4-Mbyte, Mac 30-pin, eight-bit, 80-nanosecond PAL-chip SIMMs.

► **Personal LaserWriter IINTR:** This printer ships with 2 Mbytes soldered onto its logic board plus one 72-pin, 70-nanosecond or 80-nanosecond, 1-Mbyte SIMM in the printer's single SIMM slot. Your only expansion option is to yank that out and put in a 2-Mbyte SIMM for a net gain of 1 Mbyte. Memory Plus sells the upgrade for \$65.

► **LaserWriter LS:** The LS ships with 512 Kbytes soldered on the motherboard, with sockets for 512-Kbyte RAM (four chips). Memory Plus, at (800) 388-7587, was the only vendor we could find offering an upgrade kit, for \$25.

► **LaserWriter IINT and IINTX:** The IINT shipped with 2 Mbytes of RAM, which you can't expand, unless you upgrade the IINT to II or IIg.

However, the IINTX has three SIMM banks, each holding four SIMMs, for a total of 12 SIMMs. It shipped with 2 Mbytes of RAM: four 256-Kbyte, 64-pin, 80-nanosecond Mac IIfx SIMMs in the first two banks.

To spice up your life you can add either 256-Kbyte, 1-Mbyte or 4-Mbyte 80-nanosecond IIfx SIMMs (four to a bank, no mixing), placing the highest-density SIMMs in the lowest-numbered slot.

For example, to add 4 Mbytes to a IINTX you'd add four 1-Mbyte Mac IIfx SIMM modules in Bank 0 and leave four 256-Kbyte SIMMs in Bank 1, for a total of 5 Mbytes. Depending on the combinations you install, you can add up to 12 Mbytes of RAM.

However, according to Memory Direct's Marto, if you put four 1-Mbyte SIMMs in the first bank and move four of the 256-Kbyte SIMMs to Bank 2, for a total of 6 Mbytes, the IINTX will recognize only the first 5 Mbytes because of a limitation of the IINTX logic board.

As an example of mail-order pricing, Memory Direct charges \$129 for each 4-Mbyte IIfx SIMM and \$30 for 1-Mbyte IIfx SIMMs. — By Bob Weibel



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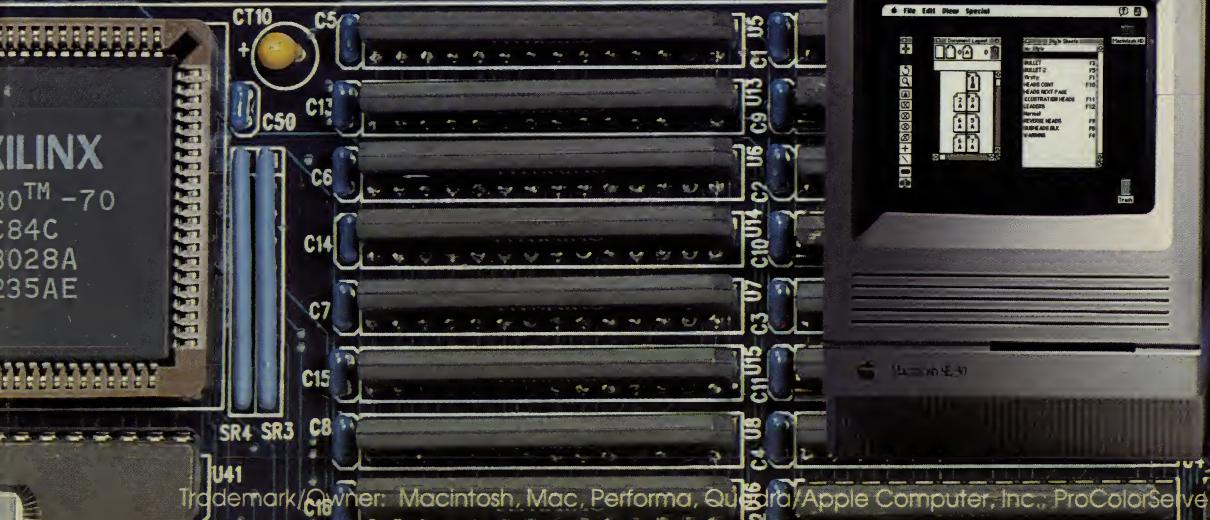
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Case Study

Colossal Graphics has the big picture

By Cliff Lehman

Think big, really big. Ron Jones, president and CEO of Colossal Graphics Inc., does. He wants the world to know that large-format, color PostScript printing is effective and available.

To prove it, last year he ran the machines at his service bureau for 10 days to produce enough 42-inch-by-25-foot individual sections, or tiles, to piece together the world's largest PostScript generated poster — a 300-by-150-foot monster that was to be installed on the field before Super Bowl XXVI in Minnesota.

Giant-size output. Jones founded Colossal in 1986 as a large-format service shop where local clients could print out full-color posters, signs and displays up to 44 inches by 25 feet. Larger images can be put together by printing and assembling tiled sections.

Jones, who describes himself as a large-format "evangelist," said, "Right now people receive

lots of messages, and it's human nature to gravitate toward the biggest, so if you get a large poster rolled up in a tube, that's what you'll open first."

— Ron Jones

His clients include lawyers who want color displays for trial presentations, architects, graphics companies, retail outlets that want to tailor point-of-sale displays for regional markets, and companies that need signs for internal use and as displays for trade shows.

Colossal charges about \$10 per square foot for printing on electrostatic machines and \$15 per square foot for projects produced on the NovaJet printer from InCad Corp.

Colossal products. The software Jones developed to bring together Macs, PostScript-clone interpreters and large electrostatic plotters is now sold to other shops around the country. Colossal's poster printing products are as varied as software-only and full turnkey systems, including:

- PS Nova for the Mac, a \$2,995 package that includes a software PostScript-clone interpreter and a Chooser-level printer driver that can be used with a customer's NovaJet.

- PS Nova Printing System, a \$15,000 system that includes a NovaJet printer as well as the software PostScript-clone interpreter and driver software. The NovaJet accommodates 36-inch-wide rolls of paper and has 300 dpi, CMYK (cyan, magenta, yellow, black) or monochrome output.

- Colossal PowerScript Digital Color Printing System for the NovaJet is a turnkey system priced at \$40,000. It includes a dedicated PC RIP (raster image processor) for the PostScript interpreter along with the NovaJet inkjet print-



Chuck Robinson, general manager at Colossal Graphics, oversees the output of one of the company's smaller poster jobs.

er. The system offers either AppleTalk or EtherTalk connections, and the PC also serves as a print server with production software for previewing, replicating and tiling.

► Colossal PowerScript Digital Color Printing System for Electrostatic Plotters is a \$28,000 to \$96,000 turnkey system for the three 8900 series plotters from XES Inc.

Jones said that most of the businesses buying Colossal's products are reprographic or blueprint shops because they are accustomed to providing the space necessary to handle large-format output and already have expertise with electrostatic plotters.

A big market. "Posters are a big thing, but a lot of our business is doing master plans for presentations for architects," said Bob Wheeler, graphics manager for National Reprographics Inc., a New York service

bureau that uses Colossal's Colossal PowerScript Digital Color Printing System.

"[Large-size prints] used to cost [architects] up to \$5,000 to do a rendering of a building," he said. "Now they can get it for a fraction of that cost."

"Large-format PostScript output is a boom market," Jones said. "A service bureau can make \$30,000 to \$70,000 per month on a \$100,000 investment in equipment." This is definitely a popular feature with managers at service bureaus, who have to keep the bottom line in sight any time they incorporate new technology.

"It's a profitable venture," said Robert Burns Jr., a sales representative at BPS Reprographic Services Inc. of San Francisco, which uses Colossal products. "It took less than a year to get back our investment, and we continually upgrade." □

"A bureau can make \$30,000 to \$70,000 per month on a \$100,000 investment in equipment."

Poster printing software lets you think big

By Clay Andres

Creating posters, banners or 30-foot-long graphs is problematic when working with printers that use regular and letter-size paper, as most software is woefully inadequate for truly large-scale print jobs.

However, two programs specifically address this oversize issue: BannerMania from Broderbund Software Inc. at the low-end and PosterWorks from S.H. Pierce & Co. at the high end.

Both programs solve the too-small-printer problem by allowing you to tile your job into a mosaic of several pages. Except for this one feature, the two programs are very different.

Simple banners. BannerMania is essentially a text-manipulation program with special features to print sections of the banner as tiles. The program cannot import or create graphics. While the program includes a set of special, decorative characters and its own display fonts, BannerMania can import Adobe Type 1 fonts, and it will display and print in color.

When the National Plastics Center and Museum opened almost a year ago in Leomin-

ster, Mass., it made all its signs using Microsoft Word and a LaserWriter. "We saw BannerMania and thought we could make some really neat signs and banners with it," said Nancy O'Keefe, the museum's administrative assistant.

O'Keefe said she finds BannerMania especially useful for special events and gatherings as those signs are "not only bigger but more professional-looking."

A PostScript workhorse. PosterWorks is a layout and tiling program with a variety of tools for handling imported graphics and PostScript files and creating color separations. The program also includes a list of PosterWorks-equipped service bureaus.

PosterWorks comes in both individual and service-bureau versions. This makes it possible for you to create your own tiled images and print them on large-format electrostatic and inkjet printers available at some service bureaus.

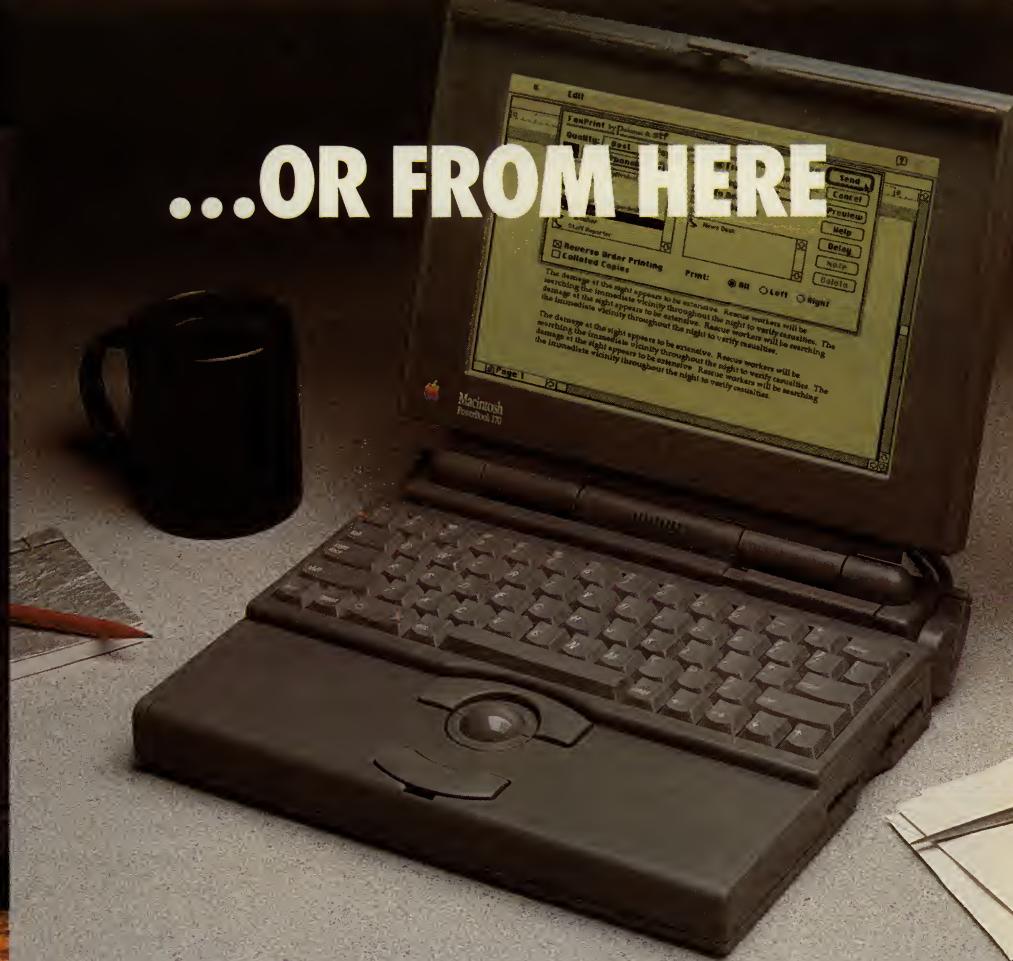
"Someone will bring us an EPS file and say, 'Make it 8 by 10 feet,'" said Paul Smith, who runs the computer graphics department at

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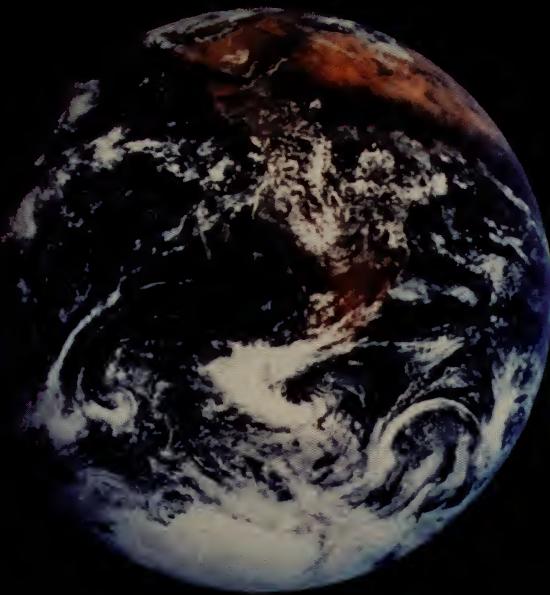
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In search of the PostScript clones

By Clay Andres

Adobe Systems Inc. has retained its substantial PostScript market lead and plans to increase this by moving forward with PostScript Level 2. Meanwhile, the leading PostScript clone vendor in both the Mac and IBM PC and compatible worlds, Phoenix Technologies Ltd., is also healthy and growing but, according to analysts, not about to overtake Adobe in market share.

Overall, the fates of other PostScript clone developers have been uneven. Tektronix Inc. has given up development of its own PostScript interpreter in favor of Adobe's.

Microsoft Corp.'s TruImage clone has signed up many vendors but isn't a dominant force. While TruImage still holds promise for mixed Mac/PC sites as the native printing language for TrueType, Microsoft has made no effort to keep up with Adobe by developing a Level 2 interpreter.

Overcoming user fears. "Some end users believe that Adobe PostScript is the only viable product," said Bryan Corrigan, senior industry analyst with BIS Strategic Decisions Inc., a Norwell, Mass.-based market-analysis company. "Three to five years ago there was a legitimate argument that it was very difficult to develop a clone, but that's not the case today," Corrigan said. The current clones are as good and in some cases superior to regular PostScript printers in terms of reliability and performance, according to Corrigan.

Finding niches. Phoenix and other clone makers, such as NewGen Systems Corp., have carved out significant market segments and continue to license new customers.

GCC Technologies Inc., a longtime Adobe customer, is instead using PhoenixPage in two new printers.

"We decided to use PhoenixPage because of the reduced time to get the printers to market and the ability to customize the code to add features," said Jim Herrmann,

GCC color-printer product manager.

Condux Inc., a consulting company in Newark, Del., prints a diverse assortment of materials, including the 2,300 mailing envelopes for its annual promotional pamphlet. But when it switched to a larger format, Condux needed a printer that could handle 10-by-13-inch envelopes.

While the company tried a couple of different large-format printers, the envelopes jammed in the circuitous paper paths of its Canon-based engines. Condux tried a GCC SelectPress 600, a tabloid-size 600-dpi printer.

"Running anything through [the SelectPress 600] was a piece of cake, and the resolution is very impressive," said Pete Peffer, Condux president. "We've run all manner of things through here, and I haven't seen any problems."

Not waiting for Adobe. Not content to wait, NewGen has found its niche supplying the high-end market with high-resolution printers. "When you control the code, you control your future," said Scott McLure, NewGen product manager. "We don't have to wait for Adobe when there's code that needs fixing."

McLure said there are other niches that can't

wait for Adobe. "No one has yet implemented an Adobe PostScript version of the Canon color Bubble Jet engine," he said, referring to

the engine in Apple's first color printer. To fill this gap, Lexmark International Inc., another former all-Adobe licensee, has co-developed a PostScript interpreter for its bubblejet, the IBM Color Jetprinter PS 4079, with Phoenix, which uses the Canon Bubble Jet print engine.

According to Lexmark, creating a custom PostScript interpreter allowed the company to use a new, fast processor from Advanced Micro Devices Inc.; cut the required RAM in half; and develop ColorGrade technology, a set of proprietary algorithms that Lexmark claims produces better overall color than comparable inkjet printers. And then there's price: Using a PostScript interpreter helped Lexmark produce a printer with a list price \$1,000 less than its closest competitor, the HP PaintJet.

"I'd been watching the Bubble Jet and this was the first version that could work with PostScript," said Dean Spahr of The Artists Studio Inc., a graphic design group in Pittsburgh.

The ColorJet allows Spahr to print on any white or colored paper with a quality that he said is close to the final offset prints.

Healthy competition. According to BIS' Corrigan, the competition that clones provide Adobe has pushed Adobe to build better products, in performance and features.

While the clone manufacturers have yet to gain any lead in the competition against PostScript-based printers, new developments in printer engines, faster processors and printing features in PostScript clones will continue to give PostScript printers competition for some time to come. □

Poster

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Oregon Blueprint Co. of Portland, Ore. Using PosterWorks, Smith's department creates the layout and then places and scales the image.

Nike Inc., the Portland-based shoe manufacturer, prints many of its store displays at Oregon Blueprint. The most recent job required the layout of two 35mm transparencies and a background map that were scanned on a high-end scanner and assembled in Adobe Photoshop.

"Even on our Quadra 950, Photoshop gets fairly slow and cumbersome, and it doesn't do tiling," Smith said. The final 10-by-4-foot poster was printed using PosterWorks and attached to Plexiglas to hang as a 3-D banner in Portland's Nike Town Store.

To demonstrate the capabilities of Mitsubishi's dye-subslimation printer at a trade show, Peter Farago, president of Farago Advertising in New York, created a large tiled poster of the printer's actual output. But first he bought a copy of PosterWorks. "It was very successful," Farago said. "Without PosterWorks, we would have suffered through tiling the thing through QuarkXPress. But more likely we wouldn't have done it at all." □

Product Info

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LaserWriter Pro 600: \$2,099; LaserWriter Pro 630: \$2,529; LaserWriter Select 300: \$819; LaserWriter Select 310: \$1,079
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CALCOMP INC.

CalComp ColorMaster Plus 6603 PS: \$3,995 (letter-size); CCL-600: \$3,995; ColorMaster Plus 6613 PS: \$6,995 (tabloid)
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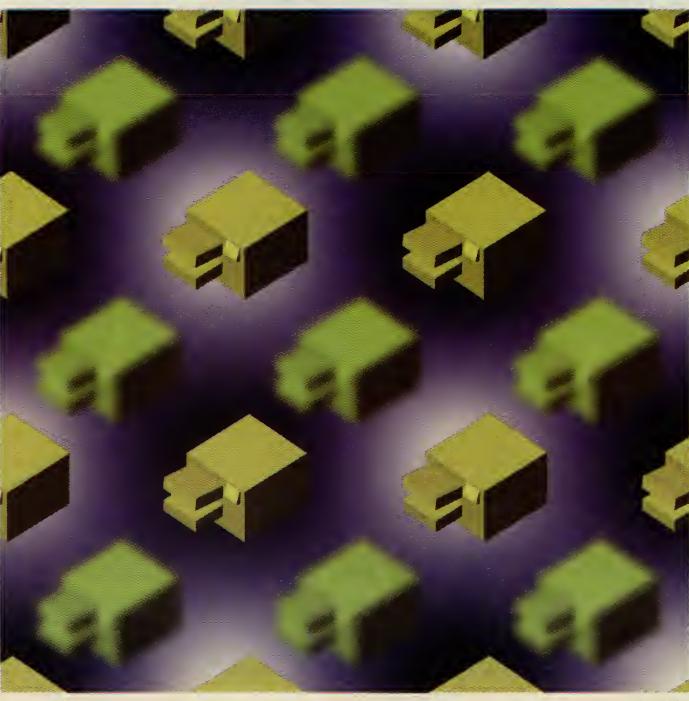
PS Nova for the Mac: \$2,995; PS Nova Printing System: \$15,000; Colossal PowerScript Digital Color Printing System (NovaJet version): \$40,000; Colossal PowerScript Digital Color Printing System (Electrostatic plotter version): \$28,000
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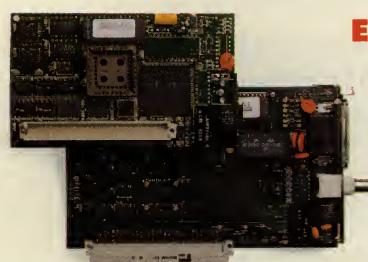
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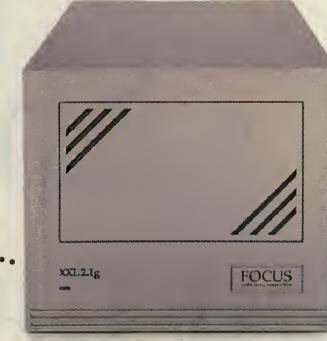
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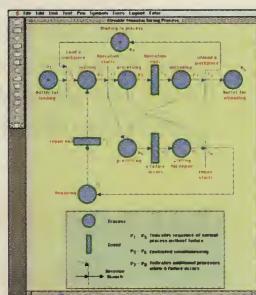
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Reviews

Claris focuses on the basics as MacWrite hits the Pro tour

Long-awaited update to MacWrite II sports a clean and unfettered interface; improved style sheets; and the addition of frames, notes and voice annotation.

By Ross Scott Rubin

Following a development cycle that suffered more delays than a baseball game in a rain forest, one of the first major word processors to promise complete System 7 support is the last to step up to the plate. The extended gestation of Claris Corp.'s MacWrite Pro was the butt of many jokes, but its recent delivery will finally give MacWrite II users a reason to smile.

Frames, which can contain text, pictures and tables, are the most dramatic addition to MacWrite Pro, which lists for \$249. Regardless of content, they can be placed anywhere on the page or anchored to text. Picture frames can perform some page-layout software tricks, such as automatically resizing a picture to a frame, and vice versa. You can scale or crop pictures, or make their frames transparent, allowing text to flow around irregularly shaped objects with clipping paths. MacWrite Pro lets you control the text offset around frames in 1-point increments. A palette containing frame-creation tools provides a preset choice of 81 colors and patterns for backgrounds and borders but no gradient fills. Borders can vary in style and thickness.

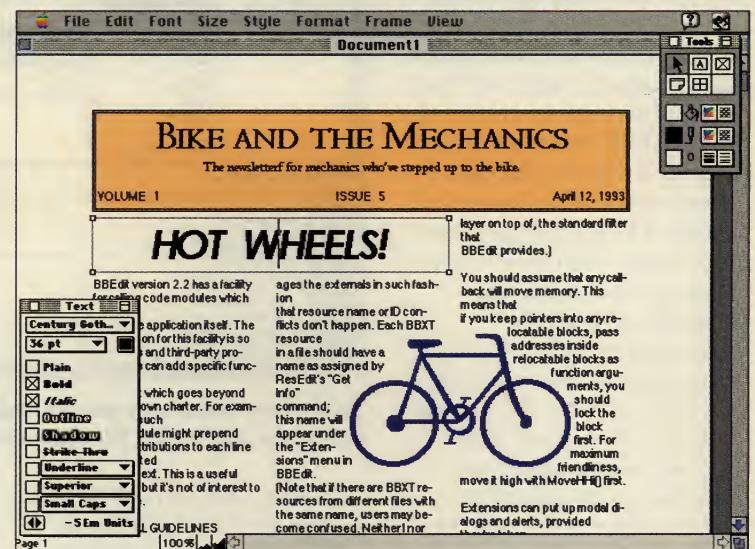
You can change the background colors, patterns and borders of text frames. However, frames have some frustrating limitations: They cannot contain multiple columns, and they do not allow for vertical justification of text. MacWrite Pro also lacks Claris Works' ability to have text flow from one frame to another. Instead, an overflow symbol signals that you must enlarge the frame or delete some text.

MacWrite Pro dramatically illustrates the flexibility of frames in its table facility, arguably the best of any dedicated Mac word processor. You can easily move, resize or sort cells, or merge or split them horizontally or vertically. All this is easily accessible from commands in MacWrite Pro's Table menu, which appears only when a table is selected. The Insert Table command automatically converts selected tab-delimited text to table format.

Electronic Post-it-style notes represent a welcome addition for workgroups. Notes are free-floating missives that annotate documents with a combination of pictures, text or microphone input. Double-clicking a note's title bar or choosing Collapse Note from the Notes menu reduces the note to a small icon. The Notes menu also allows deleting, expanding and collapsing of all document notes but provides no method of searching for them. The omission is especially hampering, given the lack of a bookmark facility.

Matters of style. Claris has brought its style support into the modern era, adding paragraph

- addDepth. See Page 58.
- artWorks. See Page 60.
- On the Road. See Page 61.
- Reviews Forum. See Page 61.



MacWrite Pro's frames can span columns and include text, graphics, tables, fills and borders. Text can wrap around nonrectangular objects, and display type can be kerned tightly.

styles while retaining character styles. In fact, paragraph styles can exist independent of character formatting. You can apply styles from a submenu, Command-key equivalents or a palette. The style palette, with its miniature menus, effectively applies styles without confusing

style application with style definition. You can also export style information into a new document. While Claris makes defining styles very easy, the Copy Ruler and Apply Ruler commands still work for quick formatting.

See *MacWrite*, Page 59

Pastel's DayMaker 2.0 right on schedule with new features, improved interface

Gets To-Do view, recurring events

By Dale Coleman

Pastel Development Corp.'s DayMaker was one of the first full-featured personal information managers for the Macintosh. Version 2.0 adds many new features, such as recurring events and a To-Do view, and includes some modifications to the interface that make it more intuitive and, therefore, easier to both learn and use on a regular basis.

Some would argue that designing a clean interface is as much an art as a science, particularly for an application as flexible and feature-rich as DayMaker. We suspect that the Item view in the original version was the stumbling block for many users. In Version 2.0, which lists for \$129.95, it has been replaced with the Item window, a much more intuitive arrangement.

Items — the basic building blocks of DayMaker — can be either calendar events or to-do elements. The

key to organizing and categorizing items in DayMaker is the tag, a powerful and quite intuitive feature found in the original version that lets you specify which calendar items are displayed in a specific view. You set most characteristics of each calendar item, such as tags, priorities, alarms, and starting and ending dates and times, in an individual Item window. (Type style is set as a document preference.)

Version 2.0 lets you have several Item windows open simultaneously. Because of this, however, it would be extremely helpful if the title bar displayed the item's name rather than the somewhat noncommunicative "Item Window."

See *DayMaker*, next page

score card

DayMaker

Pastel Development Corp.

Overall value **♦♦♦♦**

Version tested: 2.0

List price: \$129.95*

Pastel Development has added several new features and improved the user interface to DayMaker with Version 2.0 without significantly changing the overall character of the original Mac calendaring personal information manager. The most significant new features are recurring events and a To-Do view. The old Item view is replaced with a window for each item. This single change greatly enhances DayMaker's accessibility; although it's a powerful tool, you'll still need to spend more time learning than you may be accustomed to with well-designed Mac applications.

Performance **♦♦♦♦**
Features **♦♦♦♦**

Ease of use **♦♦♦♦**
Documentation/support **♦♦♦♦**

* Upgrades from DayMaker 1.0, \$29.95 if bought before Aug. 10, 1992; free if purchased after that date.

score card

MacWrite Pro

Claris Corp.

Version tested: 1.0

List price: \$249*

Overall value **♦♦♦♦**

The long-awaited MacWrite Pro upgrade exploits System 7 and supports anchored and free-floating frames, columns, sections, paragraph styles and voice annotation in a clean interface. Flexible table handling, editable page magnifications and precise kerning make it an ideal choice for users who value ease of use, revision tracking and layout control over advanced and long-document-oriented features. Only time will tell if developers will take advantage of MacWrite's new extensible architecture.

Performance **♦♦♦♦**
Features **♦♦♦♦**
Ease of use **♦♦♦♦♦**
Documentation/support **♦♦♦♦♦**

* Upgrades from MacWrite II, \$69; foreign-language dictionaries, \$49 each.

RATING S KEY

♦♦♦♦ Excellent
♦♦♦♦♦ Very good
♦♦♦♦ Good
♦♦♦ Fair
♦ Unsatisfactory

DayMaker

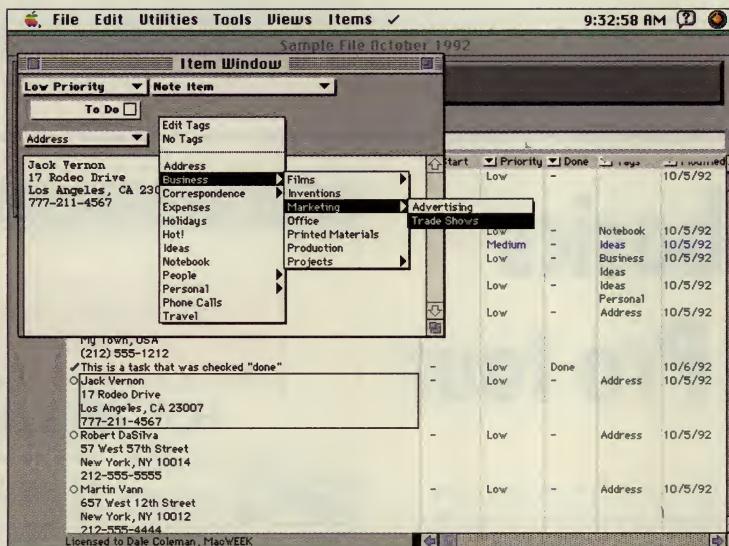
From previous page

Recurring events. The new recurring events feature is very flexible. The scheduling options of a recurring "day" event include every weekday, every other day, a specific day of the month, every "nth" day, the day of the week, every other day of the week, the numerical occurrence of a day of the week (for example, every fourth Sunday) and annually. The scheduling options for a "month" event include every month, on a specific month, bimonthly and quarterly.

This feature relies extensively on pop-up menus for setup and is, thus, fairly easy to use. If you change a characteristic of an individual occurrence in a recurring event, a dialog box appears, asking if you want the changes to affect just the single item, all related occurrences, all later occurrences or all earlier occurrences.

The recurring events feature probably offers more options than anything else on the street. It can also be terribly confusing, and under some conditions, it can cause erratic screen display and refresh problems. But as with most aspects of DayMaker 2.0's interface, you can tame the confusion with a bit of study and experimentation.

Another new feature, the To-Do view, greatly enhances DayMaker



The new Item window helps make the DayMaker 2.0 interface much more accessible than in the original version. This window is used to set item characteristics.

2.0's utility, compared with the original version's. The To-Do view is split horizontally, with "done" items in the lower portion of the window and "not done" items in the upper part. You can change a to-do's status by dragging between the two portions of the window.

Other changes.

A variety of other features are

either new or enhanced. Printing enhancements include a Print Preview, selective printing of headers and footers, optional printing of start and finish times, and printing to most popular printed organizer formats.

You can print a single item by issuing the print command when an Item window is in the foreground.

Printing fonts can now be different from screen fonts, and changing printers is easier than before. You can now change all item characteristics with commands found on the Tools menu. In addition, you can reorder the custom View, Sort and Create Items menus as needed. And Version 2.0 lets you "batch-change" several items at one time or change the status of items from note to calendar.

Pastel is claiming an overall speed increase with Version 2.0, although the program seems relatively sluggish on LC-class or slower Macs. Overall, however, we found that performance improved over Version 1.0. Loading times are reduced because the new version is disk-based rather than RAM-based. In addition to speedier start-up, this scheme lets you run



In the To-Do view you can see all to-dos, or any logical subset of them. After you complete an item, you drag it to the lower portion of the window.

DayMaker in a smaller partition. The penalty, of course, is that performance suffers whenever DayMaker has to swap portions of the calendar to and from the disk.

Other changes fall into the category of "things that shouldn't have needed fixing in the first place." These include scrolling in the Item window view, support for pulse dialing and user-definable defaults for alarms.

Documentation and support. The 90-page documentation is basically a hit-or-miss affair: serviceable but reflecting somewhat the less than 100 percent clear thinking shown in the design of the program itself. The index is anemic. For example, the Print Preview feature, which is part of Portfolio Software Inc.'s DynoPage Lite, is very useful, but there's no mention of it in the index.

On the other hand, the balloon help system is better than most. Technical support is a toll call to New York during Eastern business hours and is also available via most mainstream commercial electronic services. In our experience, Pastel's responsiveness is good.

Conclusions. DayMaker 2.0 is undeniably among the most feature-packed products in the category. It may lack a feature you might appreciate, such as import and export support for the Sharp Wizard organizer, but as a stand-alone product it can go head to head with the major competition, including Now Software Inc.'s Now Up-to-Date.

The new features, especially the To-Do view and recurring events, and the enhancements both to other features and the interface, make this a compelling upgrade for those who use and appreciate the original version. Future complementary products (see story, left), especially network support, will greatly enhance the product. Our reservations about the interface are, in the final analysis, tentative. DayMaker will work for you, but you have to be prepared to put some effort into learning and using the product.

Current DayMaker users can upgrade to 2.0 for \$29.95. Those who bought the program after Aug. 10, 1992, can upgrade free.

Pastel Development Corp. is at 113 Spring St., New York, N.Y. 10012, phone (212) 941-7500 or (800) 727-6732; fax (212) 431-3079. □

Enhancements will brighten DayMaker's future

Pastel Development Corp. has announced a variety of as-yet-unreleased enhancements for DayMaker. These include a network version called DayMaker for Workgroups, an address-book extension and DayMaker OAK (Object-oriented Application Kernel). The arrival of these products, now expected by midsummer, should significantly enhance DayMaker's usefulness.

The network version will give DayMaker many of the features currently available in Now Software Inc.'s Now Up-to-Date 2.0 (see MacWEEK, March 29), in addition to several features that will be unique to DayMaker. The network features that Pastel said should bring DayMaker up to par with Now Up-to-Date 2.0 include shared events on public calendars and the ability to automatically reconcile changes made to the local calendar off-line when you reconnect to the network. This update feature is specifically designed for mobile PowerBook users. A new view, called Multi-day, will display events in a time-grid format.

DayMaker for Workgroups, according to Pastel, will also include scheduling features similar to those currently available in ON Technology Inc.'s Meeting Maker. Now Up-to-Date 2.0 has no automatic meeting-scheduling features. The network version

will also include multiple levels of access privileges, a feature also lacking in Now Up-to-Date 2.0.

This year, the major personal information manager (PIM) purveyors are planning to introduce products that will link scheduling with contact management. Pastel's offering will be called the DayMaker Address Book Extension. In addition to standard features, including searching and telephone dialing, this product will use the DayMaker tag system to help organize and categorize contact information. After Hours Software Inc. currently offers a similar link between DateBook and InTouch using Apple events. One of the more interesting features of the Address Book Extension, as described by Pastel, is the ability to select an entry in the address book and have all related calendar items highlighted.

Third parties and motivated individuals will be able to extend DayMaker's capabilities in a variety of ways with DayMaker OAK, which will be included with DayMaker 2.1. According to Pastel, DayMaker OAK extensions will be drop-in modules. If all goes according to plan, OAK extensions will propel DayMaker into position as the most flexible, configurable PIM product available. The company lists several areas that are candidates for the OAK treatment, including:

- Automation of such tasks as entry and searching.
- File import and export to handheld electronic organizers (Now Up-to-Date already has an excellent import-export link to the Sharp Wizard line).
- File import and export to personal digital assistants, including Apple's.
- Network environment calendaring and scheduling enhancements.
- Calendar and information publishing.
- Contact tracking and time and billing management.
- Specialized time management and resource scheduling.
- Additional data views.

Apparently, our PIM software tools will be keeping pace with new advances in the hardware. Soon, anyone so inclined will be able to acquire hardware as suitable for travel as a briefcase or traditional personal organizer. Some would argue that the common PowerBook signifies that the future has already arrived. It makes sense that we use a tightly integrated application to manage contact information, events and appointments, to-do lists, shared calendars and similar information. Pastel plans to ensure that DayMaker meets that requirement. — By Dale Coleman

SYSTEM 7 COMPATIBILITY

DayMaker 2.0

Balloon help	Yes
TrueType	Yes
Publish and subscribe	No
Apple events	Yes
32-bit addressing*	Yes

*According to vendor.

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addDepth brings dimension to 2-D line art and type

addDepth is a quick and relatively easy way to add 3-D type and art to print and presentation work.

By Philip Bishop

With the release of addDepth, Ray Dream Inc. joins Adobe Systems Inc.'s Dimensions in bringing basic 3-D illustration capabilities to 2-D graphic artists. addDepth allows you to quickly and easily do just what the name says: add depth and perspective to 2-D line art and type. At \$179, addDepth is closer to the \$199 Dimensions in price than in features.

Basic basics. You can type or draw directly in addDepth and, like Dimensions, you can save your illustration as an editable PostScript draw file (an advantage, since most 3-D programs work with bit-map files, which are difficult to edit). addDepth files can be printed from within the program or exported in Adobe Illustrator, Aldus FreeHand, PICT and Encapsulated PostScript formats. addDepth can import files in Illustrator versions 1.1, 88 and 3.0; FreeHand 3.0; and PICT format.

By comparison, you cannot create type directly in Adobe Dimensions nor can you print files directly from within Dimensions.

Text is created in addDepth with the Text dialog box, which is called up by clicking the Text tool on the Working Plane. The Text dialog allows you to select a typeface, style and size, as well as set scaling, alignment, indentation, baseline shift, leading, word and letter spacing, and kerning. One feature lacking in this otherwise full complement is the capability to preview a change before committing to it. As a workaround, you can make a change, click OK, view the change and then call up the Text dialog again for additional editing. This shortcom-

ing, which is repeated in the Light-source palette, is noteworthy because the program excels at making the transition from 2-D to 3-D artwork remarkably easy. Overall, we found addDepth much more intuitive to use than Dimensions.

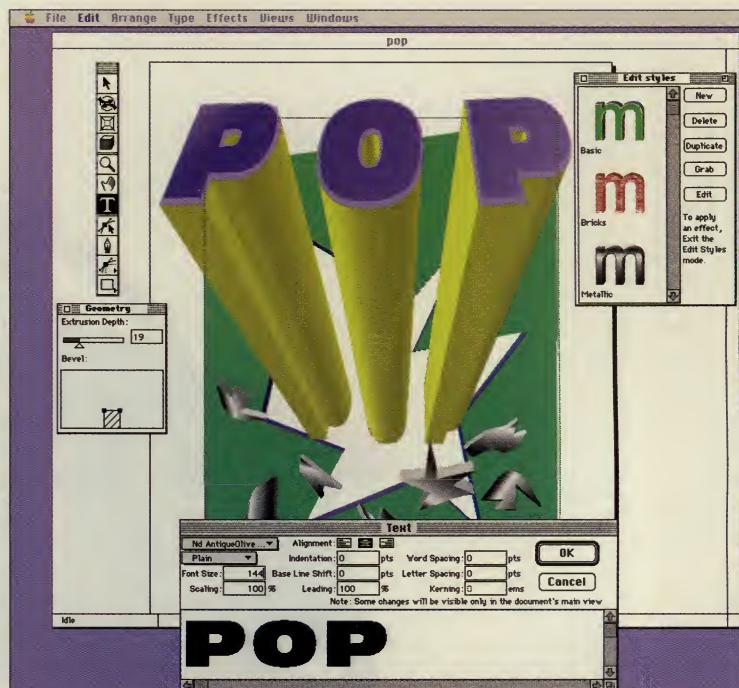
Easy tools. addDepth's Virtual Trackball is a modified version of a key component of Ray Dream Designer, the company's full-fledged 3-D modeling and rendering program. Selecting the Virtual Trackball tool places a circle around the selected object and turns the cursor into a curved arrow. With this tool you can rotate the object in 3-D space and quickly view any surface with simple movements of the mouse.

Extrusion and bevel tools, found in addDepth's Geometry palette, are also straightforward to use. With the Extrusion Depth tool you add the third dimension — depth — to the height and width of a 2-D object. You can set the extrusion depth from zero to 1,000 points by either dragging a slider or typing a number. Front and back bevels are adjusted by dragging two handles on a box called the Bevel Diagram.

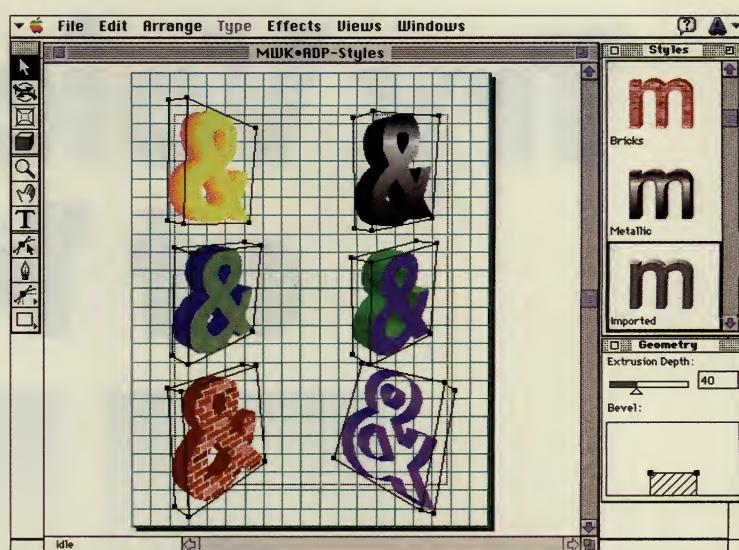
Adding color. The Color Style dialog box allows you to apply color shading, stroke, fill and a two-color gradation to an object's faces, bevels and sides. Color Style also allows you to make faces or bevels invisible, which can produce some interesting effects; for example, the program's Tubular style is a shape without front or back faces. A miniature representation of the object you are editing appears in the upper right of the Color Style dialog and can be rotated to view any side. This is a very useful feature. Styles can be saved in and selected from the Style palette, a handy scrolling window that gives a thumbnail representation of each available style.

In the Color Style dialog, you can add a 2-D decal, or "map," to an object. For example, you can put a label on the design of a cereal box. Ray Dream's implementation of this feature is disappointing, however, because the program supports placing artwork only on flat surfaces, which excludes curved objects.

addDepth's neglect of curves extends to its 2-D drawing tools: Primitives (basic 2-D shapes) for



addDepth lets you extrude type and combine it with other extruded PostScript objects. It features sophisticated controls for using type. Once on the page, you can convert fonts to outlines for further manipulation.



In addDepth you can save styles used to adorn text and objects. A few styles, shown here, are provided with the program, and you can easily add your own.

rectangles, ellipses and polygons are provided, but spheres are not. More serious, you cannot lathe objects, which precludes easy creation of swept surfaces such as bottles and bearings.

But despite its lack of round objects (you can extrude round shapes to form cylinders, but bevels are limited to a single 45-degree incline), addDepth has enough tools to create a broad range of 2-D artwork directly in the program. In addition to a 2-D Selection tool, the Pen tool can create corner and curved points that, in turn, can be edited with Bezier controls. Three other tools let you convert corner points to curve points, and vice versa, as well as add and delete points. Objects can be grouped and aligned and even combined as compound paths, thus providing the capability to create objects with 3-D holes. (Dimensions, intended as an adjunct to Adobe Illustrator, offers no 2-D tools.)

addDepth supports both RGB (red, green, blue) and CMYK (cyan, magenta, yellow, black) color models.

Perspective is a key element in the composition of a 3-D object; with it you determine from which point and at what angle to view an object. Ray Dream has devised a simple and visual means to control these important parameters: the Perspective Box, which causes a box with four handles to appear in your document window. As you drag the handles, your perspective of the objects you are working with changes. If you click and drag the box itself, you can change your viewpoint.

Rendering. Generally, we found addDepth's performance very fast. This may partly be because the objects we created in the program were small and, thus, rendered relatively quickly. Also,

See addDepth, next page

score card

addDepth

Ray Dream Inc.

Overall value

Version tested: 1.0.1

List price: \$179

addDepth allows you to add 3-D depth and perspective quickly and easily to 2-D line art and type. You can type or draw directly in the program, as well as save illustrations as editable PostScript draw files. Ray Dream has created an interface that makes addDepth remarkably easy to use. On the downside, addDepth doesn't support spheres or lathed objects, and its artwork mapping function is limited to flat surfaces; for these features, Adobe Dimensions, addDepth's main competitor, is far superior. But particularly for creating 3-D type, and for those who don't have another drawing program, addDepth is a very useful tool.

Performance
Features

Ease of use
Documentation/support

MacWrite

From Page 55

Like its predecessor, MacWrite Pro can find and change text on any formatting attribute. While the complex Find/Change command is less tedious than Microsoft Word's maze of dialog boxes for the same operation, MacWrite Pro lacks Word's ability to search on styles. Mysteriously, the program still cannot undo a Change All operation.

You can specify rules for hyphenation in the Preferences dialog or have the document hyphenate automatically. The limited hyphenation engine, though, sometimes breaks words in undesirable ways. MacWrite Pro lets you set character spacing in 0.01 em-space increments via a dialog box, or you can adjust kerning for selections from the keyboard. Automatic kerning can be enabled through a check box in the Preferences dialog box.

Other worthwhile goodies include exceptionally flexible date stamping, automatic saving and multiple backups. You can edit text in any magnification from 25 percent to 400 percent, any of which can include a side-by-side view of

facing pages. You can divide a document into sections, each with its own title page and columns. Columns, however, cannot use borders.

In addition to the standard date, time and page number, you can insert the section number, revision number and document name into a document. A Document Info command, similar to the one in WordPerfect, tabulates words, paragraphs and characters as it displays the document's revision number, disk size and the time open, but this feature is particularly sluggish.

Interface and performance. MacWrite Pro sets a word processing standard for clean and unfettered interface design. Despite the addition of 130 new features, its interface stays out of your way and lets you concentrate on writing. Still, its menu organization could use improvement. We'd like to see MacWrite Pro's various palettes controlled from the View menu. The Thesaurus command should be elevated from its hierarchical position in the Spelling submenu to the main Edit menu.

Spell checking is well-implemented. One nice feature for owners of

Claris' optional foreign-language dictionaries is that MacWrite Pro will spell check a document using multiple dictionaries simultaneously.

MacWrite II was the first Mac word processor to let you edit header and footer sizes on the page. To this, MacWrite Pro adds direct manipulation of page guides, columns and cell borders. To readjust margins, for example, you simply Option-drag the page guides to a new location. Inexplicably, while left- and right-cell borders in a table can be freely dragged, page and column guides must be Option-dragged. While text will automatically wrap around frames or object clipping paths, you cannot drag and drop blocks of text as with Microsoft Word.

Like other Claris applications, MacWrite Pro relies on floating palettes to provide quick access to commands. Compared with Word's ribbon and tool bar, the palettes are easier to use because they spell out exactly what they're doing while avoiding a trip to the top of the screen. Those with small screens will welcome the ability to quickly reduce palettes to their small title bars that can "dock" to a remote part of the screen. You can close or dock all open palettes by Option-clicking on the close or "gravity zoom" box of one palette and even change the docking location by Option-dragging a palette to a new screen location.

Perhaps because it always displays in a WYSIWYG view, MacWrite Pro's speed is only average for most operations. Users with roomier screens may find docking palettes useful, since having them all on screen slows scrolling speed significantly. Translating documents from other formats and spell checking moved at a quick clip on a Mac IIci.

MacWrite Pro seemed stable in normal use. Importing MacWrite II files caused some system errors, particularly when no printer driver was selected in the Chooser. Claris confirmed the bug and intends to address the problem shortly with a maintenance release. Microsoft Word files imported smoothly, although tables are imported as a single, long column of paragraph-delimited items.

Users of low-end Macs and PowerBooks should appreciate MacWrite Pro's relatively low 1-Mbyte suggested memory partition, which can be set to a minimum of 600 Kbytes. We were able to run the program on a PowerBook 100 with 1 Mbyte of RAM and found the performance surprisingly good.

We also have one complaint about MacWrite Pro's table feature. While its implementation is good, the maximum table size is 100 cells, which seems unnecessarily restrictive, given the feature's power.

A MacWrite II carry-over is the capability to edit at different page magnifications. You

can zoom in on objects such as MacWrite Pro's new tables.

addDepth From previous page

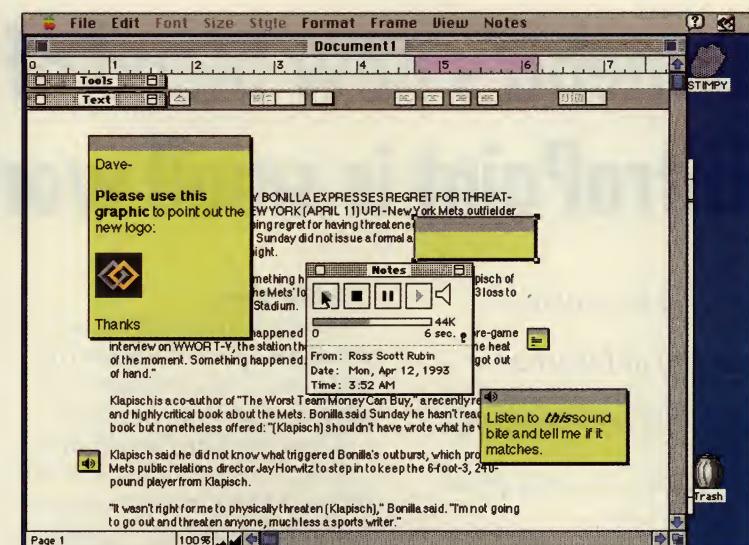
addDepth automatically interrupts screen redraw when you perform another task, so you don't have to wait long as objects are rendered.

Documentation. The addDepth documentation, which is very good, includes two tutorials, plus some discussions to help 2-D artists and designers get accustomed to working in 3-D. The documentation neglects to make it clear, however, that if you don't have either TrueType fonts or Adobe Type Manager installed, addDepth won't launch.

Conclusions. Users of Adobe Illustrator and those who require

more-sophisticated 3-D objects, particularly lathed or spherical ones, may find Dimensions the better buy than addDepth. For creating 3-D type, and other general uses where extruded art is called for, we prefer addDepth over the Adobe product. You can use type directly in addDepth, it has a simple yet capable selection of 2-D drawing tools, and you can print directly from within the program — all features that Dimensions lacks. In short, addDepth is a quick and relatively easy way to add 3-D type and art to print and presentation work.

Ray Dream Inc. is at 1804 N. Shoreline Blvd., Mountain View, Calif. 94043. Phone (800) 846-0111; fax (415) 960-1198. □



MacWrite Pro's electronic annotations resemble their sticky yellow cousins. Notes can be repositioned freely and made into icons. Docked palettes (upper left) stay out of your way.

What's missing. One feature of MacWrite Pro that Claris touts is its ADDIt capability, which gives the program a modular architecture akin to Adobe Photoshop or QuarkXPress. Cottage industries creating add-ons have contributed to those programs' power and appeal. Indeed, while the table and note editors demonstrate the potential of ADDIts, Claris' inclusion of only two ADDIts is disappointing.

MacWrite Pro is an inexpensive, focused tool that meets the average person's needs.

MacWrite Pro also lacks some of the smarter features of Microsoft Word, including envelope creation, bullet and paragraph-number generation, and drop caps (mildly surprising in such a layout-oriented word processor). Other missing high-end features include macros, outlining, equation editing and the fashionable — but of dubious value — grammar checking. While the addition of paragraph styles, document statistics and sections has bolstered MacWrite's long-document support, those seeking indexing, cross-referencing or table-of-contents generation will have to look elsewhere.

Documentation and support.

While MacWrite Pro floats balloon help for all menus, no balloons are provided for check boxes or buttons. A hypertext-based help system common to Claris applications conveys task-based assistance. Both the Getting Started and Users' Guide are exceptionally well-organized and well-

written. Claris provides technical support via toll call, fax, and its own forums on AppleLink, America Online and CompuServe. While support lines are invariably busy, representatives do return calls and on-line support is impressively prompt.

Conclusions. In this age of bloated, RAM-eating word processors, MacWrite Pro is an inexpensive, focused tool that meets the average person's needs. What it does, it manages very well in a svelte package. While lacking the raw speed of WordStar International Inc.'s WriteNow, MacWrite Pro's XTND filters and support of publish and subscribe link it to other packages that could help fill the features gap. Frames allow users to create eye-catching documents easily.

Nevertheless, Claris could add more features without sacrificing simplicity. Without taking better advantage of ADDIts, MacWrite Pro's developers will be hard pressed to match upcoming releases of Microsoft Word and WordPerfect. As it stands, MacWrite Pro has a Mac-like interface that's second to none. If Claris can pick up the pace, its users will have the best of both worlds.

Clarion offers a modest \$69 upgrade to users of previous versions.

Clarion Corp. is at 5201 Patrick Henry Drive, Santa Clara, Calif. 95052. Phone (408) 727-8227; fax (408) 987-3932. □

SYSTEM 7 COMPATIBILITY

MacWrite Pro 1.0

Balloon help	Yes
TrueType	Yes
Publish and subscribe	Yes
Apple events	Yes
32-bit addressing*	Yes

*According to vendor.

Deneba's new blend of Canvas, UltraPaint is small work of art

artWorks combines the best of Deneba's drawing and painting programs at a low price.

By Philip Bishop

Deneba Software's artWorks is a drawing and painting program created from the selective union of two of the company's existing products — Canvas and UltraPaint. With an expected street price of less than \$90 (it lists for \$149) artWorks is sure to be attractive to the home, education and small-business market at which it is aimed.

Spitting image. Not surprisingly, artWorks bears a strong resemblance to its parents. artWorks' tool bar, for example, has the same design and basically the same components as the tool bar from the lackluster UltraPaint, including pop-up menus for patterns, background and foreground color, line size, magnification, dashes, and line types.

With artWorks, however, these tools have a new and much more powerful environment in which to function. For starters, artWorks is a 24-bit-color program, up from the eight-bit functionality of UltraPaint. (This means full access to the 16.7 million-color paint box found in most painting programs today.) And while UltraPaint requires that you work among three levels — Paint, Draw and Composite — artWorks, mimicking the popular Canvas, combines Paint and Draw operations in a single level, plus it adds a Layers function.

Canvas' presence in artWorks is more than superficial. Although not based on the same core code, artWorks' Draw engine is pure Canvas: It partakes of the latter's open architecture design, which makes considerable use of external plug-in tools in addition to a set of core tools.

artWorks' tools, both core and external, also employ Canvas' familiar "multiplex" icons: A right-facing arrow indicates the presence of a pop-up menu (containing more options), while two arrows pointing down indicate that by double-clicking on the icon, you can call up a dialog box containing a Tool Manager. Tool Managers allow you to customize 22 of artWorks' tools and functions.

Like Canvas, the System 7-savvy artWorks also supports the third-party Acquire and Effects plug-ins for Adobe Photoshop. Acquire plug-ins let you scan artwork directly into the program, for example, while the Effects plug-ins are primarily filters, which allow

such special effects as embossing or sharpening.

As does Aldus Corp.'s SuperPaint (artWorks' main competitor in the low-cost painting and drawing field), artWorks also provides access to Gallery Effects, Aldus' collection of filters that work like Photoshop plug-ins.

You can adjust filter settings in the Filter Manager, but we found this a lot more complicated than it should be in an entry-level program.

Deneba does not recommend using Canvas' external tools with artWorks, although the company said some will work fine. We found only three Canvas tools that artWorks could load and only one, registration marks, that worked.

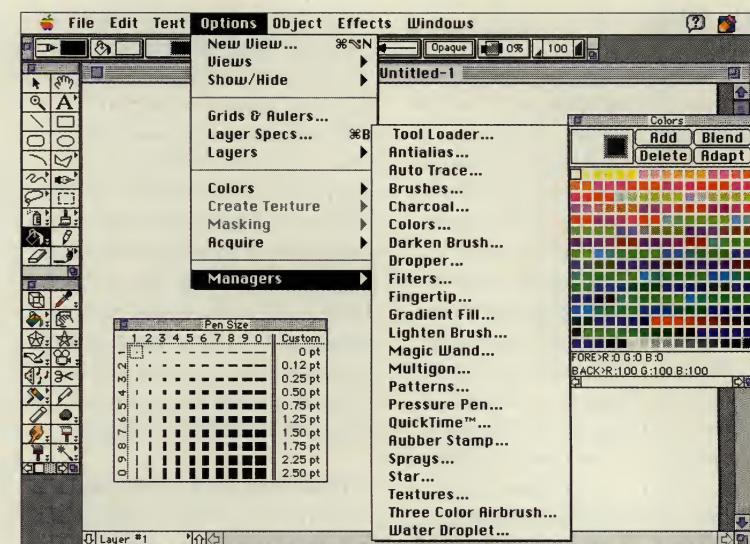
Tool set. artWorks' external tools are important because the program's core tool set includes only the most basic Paint or Draw features: Line, Rectangle, Rounded Rectangle, Oval, FreeHand, Paint Brush, Spray Can, Pencil, Pen and Eraser. artWorks does have a useful extended collection of lassos and marquee tools for adding to and subtracting from selections. And it uses Bezier curves in much the same way Canvas does.

But text in artWorks is basic — no kerning or leading and no capability for binding text to a path. artWorks inherits a couple of naturalistic tools from UltraPaint — Quill Pen, Charcoal and Chalk — but if you need these features, Fractal Design Corp.'s Painter or Sketcher are more artful solutions.

artWorks allows you to create and use custom textures. You can also create your own textures in artWorks from paint or draw objects.

Outsmarted. artWorks has a virtual-memory function called SmartMemory that automatically draws on available RAM as the memory demands of an illustration grow. We had mixed results testing this feature. Sometimes a file larger than the RAM partition set in the Get Info box opened fine. On other occasions, however, we received out-of-memory messages even though we had plenty of RAM left.

The waters were further muddied by the fact that artWorks appears not to support a broad range of TIFF formats. Although TIFF is standard for handling bit



artWorks is largely the fruit of the union of Deneba Software's Canvas and UltraPaint programs. The Pen Size palette and the extensive use of Tool Managers, among other features, mimic Canvas. Twenty-two tools and functions have managers.



artWorks supports many filters, both resident and imported. The Crystal filter was applied to the lower photograph, resulting in the top image.

maps, it has many variations. For example, artWorks couldn't open some TIFF files that opened fine in Photoshop.

Despite this problem, artWorks, like Canvas, supports an impressive array of export and import file formats. In addition to some TIFF formats, artWorks supports Canvas, Encapsulated PostScript, GIF (Graphic Interchange Format), Illustrator 1.1 and Illustrator 88, MacDraw I, MacDraw II, PICT, Startup Screen, and UltraPaint. Exported files can also be saved as QuickTime PICT or QuickTime Movie files.

The artWorks manual, which contains four tutorials, is generally very helpful but contains no color illustrations. Also, none of the Filter Effect items is mentioned in the index.

Conclusions. We'd like to see more-consistent memory handling, broader support for TIFF formats, more-robust text handling and true support for Canvas external tools. But overall, artWorks is a welcome addition to the crowded graphic arts software scene. It offers the

low-end user much of the muscle found in Canvas, sports a capable painting module and comes with an impressive array of external tools to augment both Paint and Draw functions. And you couldn't ask for a more appealing price.

Registered U.S. and Canadian owners of UltraPaint can upgrade to artWorks for \$49; U.S. and Canadian owners of Microsoft Works, ClarisWorks, GreatWorks and Ragtime can obtain artWorks for \$79. artWorks comes with a 60-day money-back guarantee.

Deneba Software is at 7400 S.W. 87th Ave., Miami, Fla. 33173. Phone (305) 596-5644; fax (305) 273-9069. □

SYSTEM 7 COMPATIBILITY

artWorks 1.0

Balloon help	Yes
TrueType	Yes
Publish and subscribe	Yes
Apple events	Yes
32-bit addressing*	Yes

*According to vendor.

score card

artWorks

Deneba Software
Version tested: 1.0
List price: \$149
Overall value **♦♦♦♦**

Deneba Software has married the best of Canvas, its popular drawing program, with the best of UltraPaint, its lackluster painting program, to create a powerful entry-level drawing and painting program. The System 7-savvy artWorks has an impressive feature set, particularly when you consider its \$149 list price. It sports 24-bit painting, Bezier curves and custom patterns. It supports QuickTime, Aldus Gallery Effects, and Photoshop Acquire and Effects plug-ins. We had mixed results working with artWorks' virtual-memory function, however, and the program doesn't support a broad range of TIFF formats, nor does it support Canvas' external tools. Despite these concerns, artWorks is a very good buy if you don't need the full functionality of a drawing package such as Canvas.

Performance **♦♦♦**
Features **♦♦♦♦**
Ease of use **♦♦♦**
Documentation/support **♦♦♦**

Score: 8.5

Latest PB utility welcome addition

On the Road with Palomar Software

By Dale Coleman

If battery management were the whole story, there would be little need for yet another PowerBook utility product.

But there's more to PowerBook resource management than batteries and custom cursors. On the Road, Palomar Software Inc.'s \$99 utility, ably addresses mobile connectivity, which is an entirely different set of mobile computing concerns.

On the Road can defer printing and faxing automatically until you connect the PowerBook to either a network, phone line or dock. In addition, you can train On the Road to recognize and distinguish between networks and docks to which you connect regularly and have it mount network volumes, either automatically or at your discretion. You can also have On the Road open documents and launch specified applications and desk accessories for each environment to which you might connect.

On the Road consists of a system extension that installs its menu icon on the right side of the menu bar and an application. Both the extension and the application are installed in the System Extensions folder, a fact that may trouble some organization purists.

There are two steps to the On the Road process: determining what you're plugged into and then specifying what actions to take. These actions include such things as printing and faxing any spooled documents, mounting network volumes, and launching user-specified applications and opening user-specified documents.

On the Road determines your "location" by scanning the devices connected to your PowerBook each time you start or wake it up. These include available network volumes and other external devices such as a telephone line or a docking station.

When no printer is connected to the PowerBook, On the Road spools documents for printing later. In this condition, the Print button in the print dialog box is replaced by a Defer button.

You can cancel print jobs easily or redirect deferred jobs to a different printer. The only requirement to changing the target printer of a deferred job is that the printer must use the same (or compatible) printer driver. For example, you cannot redirect a deferred print job from a PostScript LaserWriter to an Apple StyleWriter.

On the Road can defer output from the most common printers as long as background printing is enabled. If you direct a deferred print job to a printer for which background printing is disabled, On the Road will enable it automatically. Supported printers include Apple LaserWriters and StyleWriters (including the StyleWriter II); Hewlett-Packard Co.'s LaserJets, DeskWriters, PaintJets and PaintWriters; Eastman Kodak Co.'s EktaPlus; and plotters using Palomar's Plottergeist.

Internal fax modems from Global Village Communication Inc. and PSI Integration Inc. and most fax modems compatible with FaxSTF with FaxPrint are supported, as is Apple's popular Fax/Data Modem. The Duo Express Modem will be supported in the upcoming maintenance release, which is scheduled for late this month.

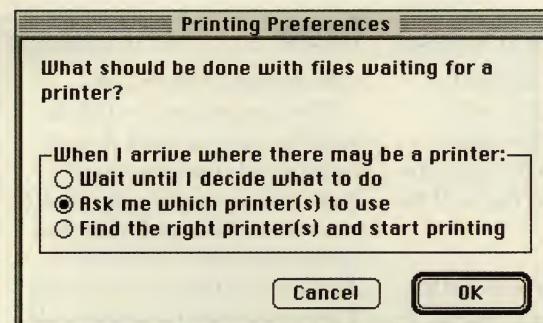
In addition to standard AppleTalk networks, On the Road recog-

nizes EtherTalk and AppleTalk Remote Access (ARA).

The itinerary. The On the Road menu is divided into related functions: change location, mount volumes and change printer; defer printing and defer faxing; turn off AppleTalk and disconnect from ARA; specify internal or external modem; and open the application.

The application lets you manage behavioral aspects of On the Road features. For printing you can view a list of deferred jobs and specify where these are to be printed once connected to a network, or you can schedule deferred faxes to go at a specified time once a phone line is detected. Other options include deciding how network volumes should be mounted, choosing when AppleTalk should be turned on or off, modifying how On the Road identifies a location, and editing a list of known locations.

Road fare. This all works very easily. When you connect to a recognized network, On the Road can change the Chooser-selected print device automatically from the one that was active when you issued the deferred print command to the one you specified the last time you were connected to that network. This feature means that as long as you are using printers that use the same or compatible printer drivers, you can basically forget about the destination printer until it comes time to physically retrieve the printed output. Deferred printing and faxing



When you reconnect the PowerBook to a network, you can tell On the Road which printer to use, tell it to ask which printer to use, or tell it to find the printer last used at this location and begin printing.

are extremely useful when you're traveling. We regularly shuttle a PowerBook between two offices, so we particularly appreciate On the Road's ability to choose network printers and mount network volumes automatically.

The Custom Arrival Actions feature works as a location-specific Start-up folder for each defined location. It is conceptually related to the operating system's Start-up folder and is very helpful. For each location, On the Road creates a folder with the location's name that includes an alias for each network volume at that location. You can put your own items in this folder and, thus, greatly customize your portable virtual environment. For example, for our office setup we put aliases of the network electronic mail and our word processor in that location's Startup for On the Road folder. A file-synchronization utility is an excellent candidate for use with this feature.

The Disconnect from AppleTalk Remote command is a major convenience. With this single command you can both close the ARA connection and quit the ARA application, saving both several steps and 230 Kbytes of RAM.

Less than perfect. Our complaints are relatively minor. We dis-

covered a small bug in Version 1.0 that caused AppleTalk to be turned off despite our having checked the AppleTalk Always On preference option. Palomar said a maintenance release has fixed this problem, and other features, including support for Novell NetWare, the Apple Express Modem and PostScript Level II, have been added to Version 1.1, shipping this month.

Turning off AppleTalk to save battery life annoys us because it isn't logically related to the other On the Road missions.

On the Road would suit our temperament better if the designers would give it less of a Big Brother attitude. For example, if you decide to deselect deferred printing from the menu, On the Road takes it upon itself to check for the availability of an appropriate printer and, if one is not found, imperiously informs you that printing will remain deferred. On the Road takes a couple of seconds to detect the absence of the printer. In the meantime, you may have moved on to other tasks and then will find the rude dialog distracting. Second, it's your PowerBook, and if you want to disable deferred printing, we can think of no credible reason why your judgment shouldn't take

See *On the Road*, next page

score card

On the Road

Palomar Software Inc.
Overall value ◆◆◆◆

Version tested: 1.0

List price: \$99

There's more to PowerBook resource management than battery life and fat cursors. On the Road provides deferred printing and faxing so you can issue print and fax commands when you're away from the printer and phone line, then have the documents printed and faxed automatically when the PowerBook is reconnected. In addition, it offers an automatic remounting function that can be adequately described as Apple's Auto Remounter with a brain. In addition to remounting, On the Road can open different documents, applications and desk accessories automatically based on the environment to which you are reconnecting. The automatic AppleTalk-management feature, however, is an aspect best left to battery-charge-management utilities.

Performance ◆◆◆
Features ◆◆◆◆

Ease of use ◆◆◆◆
Documentation/support ◆◆◆◆



Media Suite Pro users express Avid support

I found your recent review of Avid Technology Inc.'s Media Suite Pro (MacWEEK, March 29) to be completely off the mark in defining the product and describing its features.

I am a video producer for the Massachusetts Criminal Justice Training Council, with more than 10 years of experience in producing corporate, industrial and training videos. I have been working with the Media Suite Pro since Decem-

ber 1992 and have found it not only fast and feature rich but crash-free.

Having this system has allowed me to edit programs with effects and titles/graphics that would be impossible to create on my half-inch system. One of the programs included more than 30 titles/graphics that were very complex and supered with dissolves, and the system never crashed. The Media Suite Pro offers the "industrial" and "corporate" producers all the bells and whistles our low-budget programs would never allow.

I am confused as to why you would compare such a system to Adobe Premiere when the Media Suite Pro offers so much more high-quality production and output to virtually any tape format, making creative production affordable to the industrial producer.

I am required to produce high-

quality video programs and output them in real time to tape for distribution. None of the QuickTime multimedia software you mentioned offers this.

I sincerely believe your review of the Media Suite Pro was for the wrong audience. If you had corporate and industrial video producers in mind, you would have had high marks for the system.

*Georgia Jianos, video producer
The Commonwealth of Massachusetts
Needham, Mass.*

I have been a longtime user of Avid products, and my company is now a dealer of Avid systems.

Sonja Schenk's review of Media Suite Pro, although exhaustive in many respects, was somewhat uneven in its review and evaluation

See *Forum*, next page

Send your comments to MacWEEK Reviews Department, 301 Howard St., 15th Floor, San Francisco, Calif. 94105. MCI (323-1203); fax (415) 243-3650. Include your name, address and phone number. We reserve the right to edit for clarity and length.

On the Road From previous page

precedence over On the Road's.

The documentation is well-organized and quite thorough. The program's balloon help is actually useful, a condition that is all too uncommon.

Conclusions. We give On the Road very good marks for a new utility that is both innovative and truly useful. You'll have to make peace with its imperious nature, but overall we think the advantages of its many features, including deferred printing and environment recognition, make it a compelling product.

Palomar Software Inc. is at 2964 Oceanside Blvd., Suite D, Oceanside, Calif. 92054. Phone (619) 721-7000; fax (619) 721-4758. □

SYSTEM 7 COMPATIBILITY

On the Road 1.0

Balloon help	Yes
TrueType	n/a
Publish and subscribe	n/a
Apple events	Yes
32-bit addressing*	Yes

*According to vendor.

Forum

From previous page

of the features of the system.

The strongest feature of Media Suite Pro is its raw speed. Among the projects I've produced on the system thus far was an eight-minute motivational video with more than 100 individual edits, many match dissolves and extensive beat cutting. The entire project took less than 15 hours to produce, including about six hours of sorting through about 30 different source tapes and capturing the desired material.

Schenk mentioned that a 2-Gbyte drive should be "enough for a two-minute project with a generous 12-to-1 shooting ratio." While a 12-to-1 shooting ratio is certainly generous, I would never think of capturing all of the material to hard drive! With paper cutting, a ratio between 2-to-1 and 4-to-1 is closer to what you'll capture to the drive.

Although it is true that the audio tool needs enhancement, the fact that you cannot increase the volume of a clip is not really a problem. Since the line level coming out of the system has to be pulled down significantly when recording out to tape, I was able to balance all the sound in the programs I created by pulling down the levels on all clips

and balancing from there. One may consider it a work-around, but I've never worked on a mixing board with the gains pushed all the way up while mixing.

While much of her criticism of the text tool is deserved, I have yet to have a crash using any Type 1 or True Type typeface. Perhaps the source of her crashing problem lies elsewhere. I've certainly seen it happen before. I've used the (as-yet-unreleased) 1.1 text tool, and it is much improved.

Her comments on the "sheer number of bugs" also leave me confused. I had two crashes during the use of the system (quite good for a Macintosh hardware/software solution) and have not experienced any problems with custom sort. There are certainly a few glitches in the interface, and as she correctly stated, a few dialogs make little to no sense. I fully expect Avid to address these problems in the 1.1 release. Avid's track record on updates on the Composer line is excellent.

Most importantly, with Media Suite Pro I've never worried about going to tape. The same cannot be said for the QuickTime-based solutions. Sync is always rock solid, and the effects have to be processed only at the time of creation. Media

Suite Pro exceeded my expectations and, in my opinion, is the only online digital editing system I've seen, excluding the high-end and much-higher-cost systems, that can be counted on to work every time.

*Gregory Staten, training manager
Design Network
Houston*

MacWEEK replies:

We concede that the hardware Avid originally hand-delivered and installed for us could have been flawed and that the many crashes we experienced may have been because of a problem, such as "bad RAM," which Avid suggested as a possible culprit. However, when the Avid software was not in use we had no problems on the Quadra with other applications — such as Macromedia Director, Adobe Photoshop, Microsoft Word, Adobe Illustrator and Adobe Premiere — and we were able to use extensions and low-level processes such as Adobe Type Manager and AppleTalk.

Avid hand-delivered a replacement system that also promptly crashed, further convincing us that the apparent problems were more than a fluke. Avid's technical support was quick to return our calls but did not have an explanation for our problems.

As far as why we briefly compared the Media Suite Pro to Adobe Premiere and other multimedia products in a sidebar, Avid's own press release, dated Jan. 29, stated plainly that "applications for Media Suite Pro include corporate presentations, instructional videos and multimedia programs." The main review made few comparisons with software-based applications such as Premiere.

We reviewed the system as Avid sells it. We stand by our conclusion that the Media Suite Pro is a remarkably fast and capable video-editing system that lacks features and refinements in the areas of audio, graphics and special effects, making it a marginal multimedia application, bugs notwithstanding.

For the record

In our April 5 review of Multi-Ad Services Inc.'s Multi-Ad Creator, we mistakenly reported that the program lacks the capability to import Desktop Color Separation files. In fact, while it is not documented, the program both imports and exports this format.

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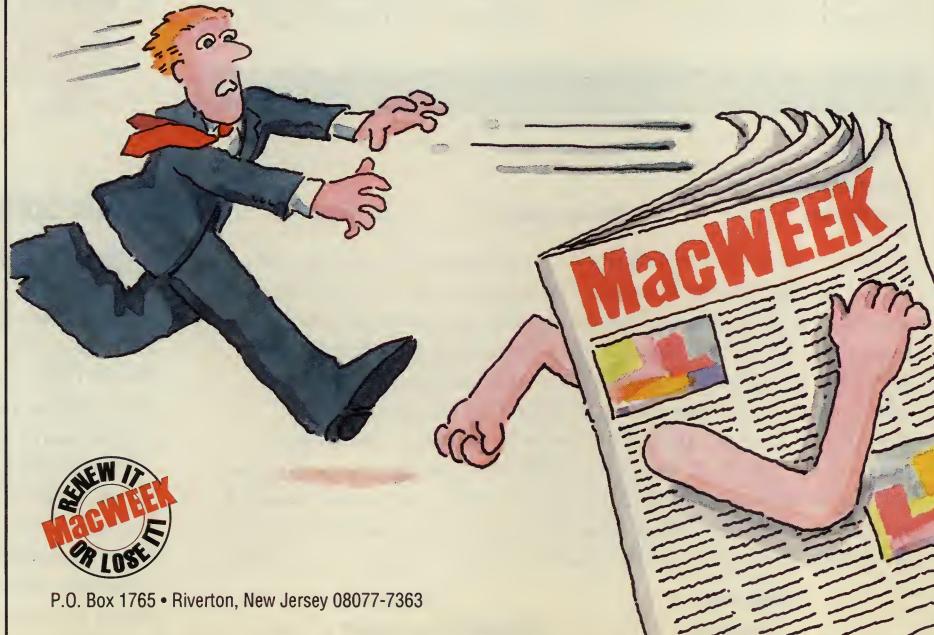
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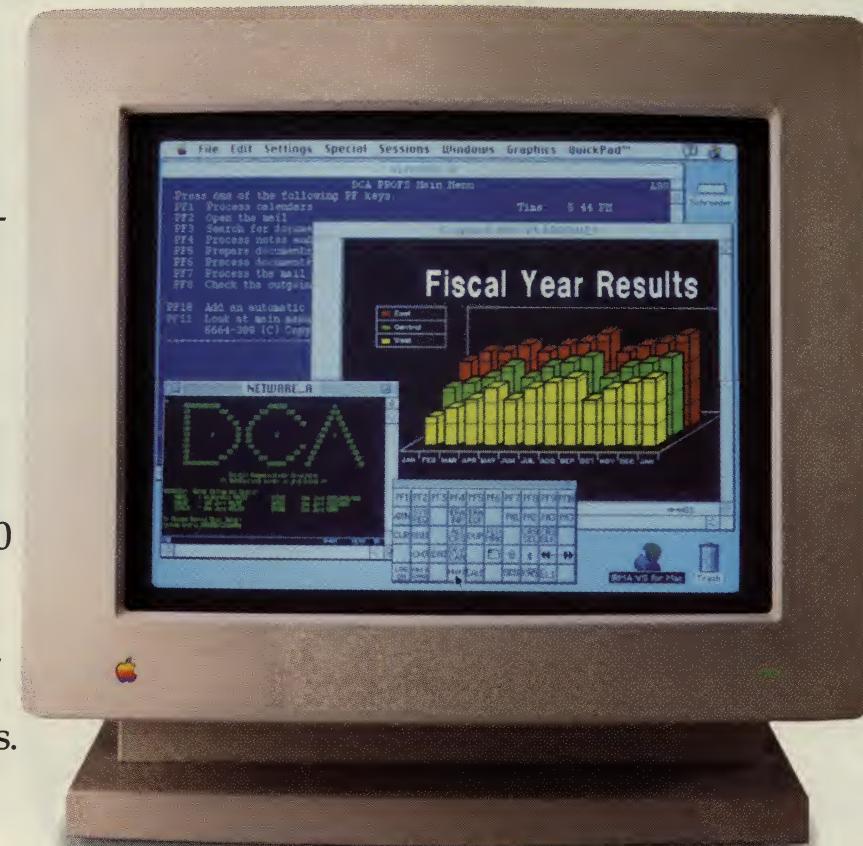
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PRODUCT WATCH

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Getting the big picture on large-monitor specs

The variety of large-monitor specifications can be confusing. Here's a guide on what to look for before you buy.

By Clay Andres

Although a large-screen monitor and the required color video card together still cost more than many Mac systems, today the price is about half what the first units cost. These large displays are more popular than ever, especially in markets such as color pre-press and graphic arts, which use 24-bit color. And where there is a buyer, you're sure to find a seller; a plethora of vendors offer numerous, often confusing, variations on the large-monitor theme.

Choosing among brands.

With the newest Trinitron picture-tube technology from Sony Corp. of America being offered by several sources and other quality tubes available from makers such as Hitachi America Ltd. and NEC Technologies Inc., how do you decide which monitor to get?

Ultimately, experts say you have to judge for yourself; while the monitor may be true to specifications, the sharpness, brightness and other key features may vary depending on the vendor's implementation.

"Even though it's the same OEM picture tube, there's sometimes fuzziness in the corners of the screen, depending on the brand," said Harold Mann, principal of Mann Consulting, a multimedia consulting company in San Francisco that uses large-screen monitors from Radius Inc.

But every company has its satisfied customers. Paul Evenson, vice president of Montgomery Securities Inc., an investment bank in San Francisco, said, "If you put the [two-page monitor] screens next to each other, the whites are just whiter on the SuperMac [Technology Inc. monitor]." Montgomery has nearly 100 Mac workstations using a variety of SuperMac monitors on the trading floor. "We have stockbrokers watching the screens all day. SuperMac outshone everybody in that crisp, clear look."

Sony dominates market.

Even though other vendors vie for market share, Sony's Trinitron picture-tube technology overwhelmingly dominates the market for large color monitors. NEC, like Mitsubishi Electronics America

Inc. and Hitachi, sells its own big Mac displays, but according to analysts, only Hitachi has had any success as an OEM supplier. Most 19- and 20-inch color monitors are Sony Trinitrons; most 21-inch monitors come from Hitachi.

Although most Macintosh color-monitor vendors offer Sony's 20-inch Trinitron picture tube, Hitachi and NEC make tubes that some people consider sharper than the original Trinitrons. "Sony has to continually improve because the others keep catching up," said Jack Roberts, industry analyst for Dataquest Inc. of San Jose, Calif.

To meet this challenge, Sony has introduced a new picture tube, the Digital Control Trinitron Monitor GDM-2038 under the Sony name or the Trinitron 3.5 for OEMs.

Versions are available from Sony, SuperMac, RasterOps Corp. and Radius, all of which started shipping in March. It has the same dimensions as the familiar 20-inch Trinitron, and it retains the multi-scanning capability that lets it produce multiple resolutions on the same monitor.

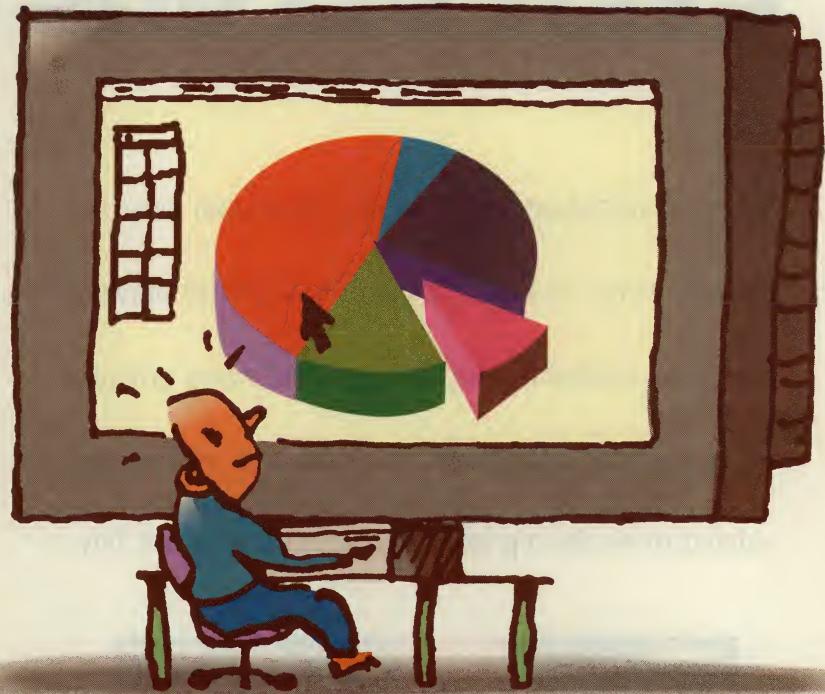
In addition to the improved tube, Sony has added a microprocessor that gives its display more resolution choices and higher-resolution options, higher refresh rates, and some new controls.

There are all the usual control knobs for features such as brightness and contrast, plus controls to adjust the visual geometry of the display.

If you've ever had your 1- or 2-year-old display taken apart and adjusted by a technician, you can immediately appreciate the convenience of having these controls on the front panel. Furthermore, all the controls can be set from your Mac by connecting it to the service port in the back if the monitor implements that feature.

"Being able to adjust the absolute brightness and contrast from the keyboard makes maintenance a lot easier," said Kevin Alexander, vice president of Desknet Inc., a system integrator and consulting company in New York.

Implementing features. Not all monitor vendors (including Sony)



SCOTT CAMPBELL

make every feature available, and this is what will determine the price and market niches for the various incarnations of large-size displays.

SuperMac's SuperMatch High-Res 20 Trinitron Display and the Radius IntelliColor Display/20 come with software that lets you control all of the display's settings from the keyboard.

The lower-priced SuperMatch 20•T XL and the new RasterOps/20T Multiscan Color Display will not include that software. However, RasterOps is making the software available to its trained dealers, since the company said it is more of a service issue than a user feature.

RasterOps is upgrading its CorrectColor/20T in April. This monitor, intended for color-critical work, includes hardware and software for a flat-field luminance-calibration system. The system is meant to ensure corner-to-corner color accuracy and uniform brightness by averaging readings across the display. Once the monitor is calibrated, you can adjust the characterization of the display to suit different viewing conditions.

Service and support. Other important buying considerations include warranties and support

See Monitors, Page 68

Case Study

Sony the big choice at Capps Studios

Ad agency subsidiary makes move to large monitors.

By Clay Andres

Capps Studios, a wholly owned subsidiary of the giant international ad agency Leo Burnett Co. Inc. of Chicago, went directly to the source recently when it bought 40 20-inch Trinitron monitors from Sony Corp. of America.

Capps, a full-service advertising print production studio, decided to convert to Macintosh and hired Andy Hullinger as Macintosh special projects leader.

Two years later, 20 production artists work mostly at Quadra 950s using Adobe Illustrator and Photoshop, Aldus FreeHand, and QuarkXPress — and Sony monitors. The other 20 monitors went to another Leo Burnett division.

Video-in, -out needs.

"We know we want to be able to take advantage of QuickTime and multimedia," Hullinger said. "The Sony is the only monitor with all the controls on the front and inputs and outputs out the back. We knew we wanted to take advantage of that."

So even though Hullinger bought video cards from RasterOps Corp. and SuperMac Technology Inc., the multimedia capability of the Sony-branded display with its extra video input and output ports swayed his monitor purchase decision. "All the OEM versions we saw had a different plastic covering with no openings in the back."

See Capps, Page 68

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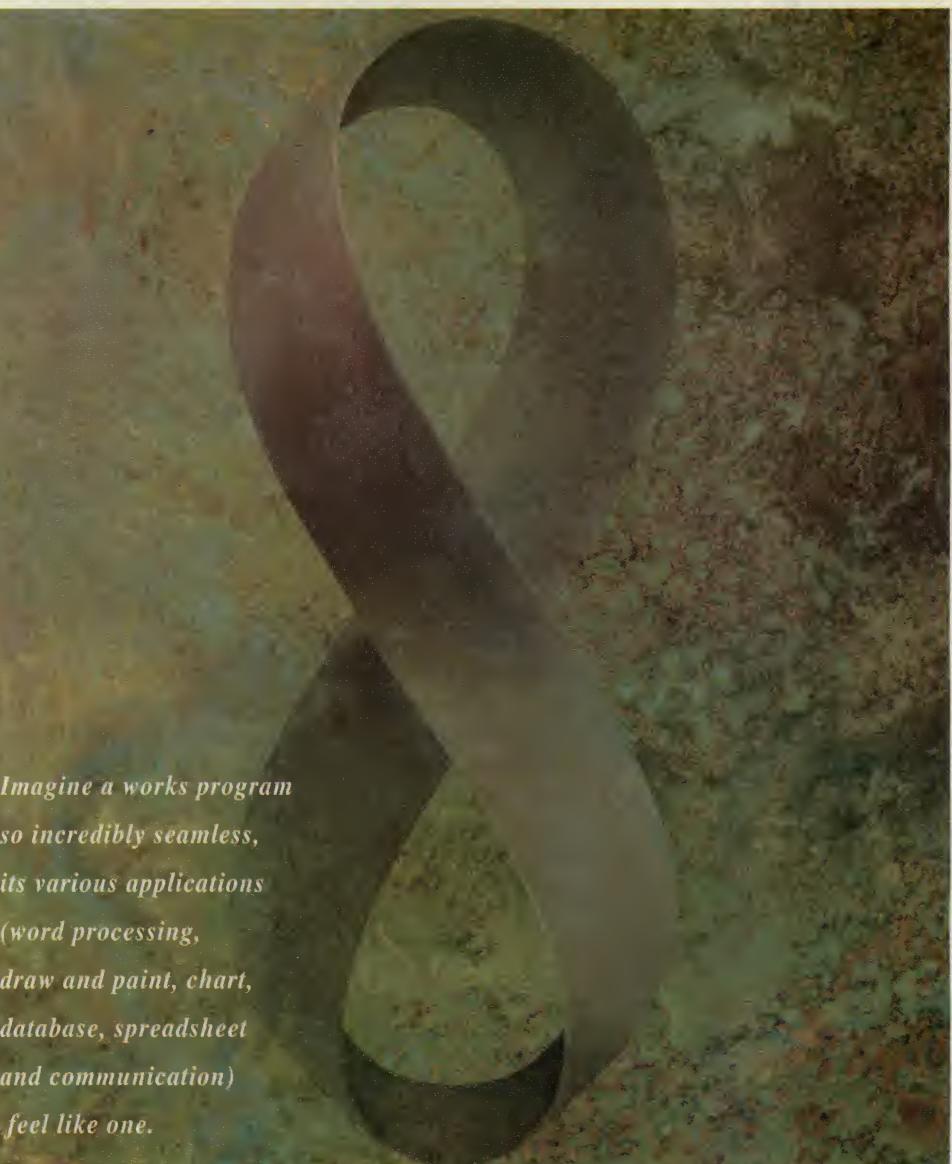
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Capps*From Page 65*

What also swayed his decision was that Sony offered them the best price. "And we felt we would get the best support by going directly to the Trinitron source." Indeed, they got a plane load of support.

When the first batch of monitors Sony shipped had problems, Sony flew a dozen technicians to Chicago to set things right.

Although the company thought the problem might be environmental rather than in the monitors, the company "sent replacements and actually retooled them to tighter specs," Hullinger said.

It turned out that Hullinger and

his crew had been using the front controls to go beyond factory specifications to eliminate the black border around the active display.

Happy ending. Now, better educated about the intricacies of adjustment and less zealous about customizing the display, Hullinger is satisfied with the monitors. "I've been really pleased with the comfort of sitting in front of one. We offer polarizing filters to everyone, but no one has wanted them yet," he said.

As far as using the Sony displays with different video cards, "We can't tell which card is in which machine without looking at the software," Hullinger said. □

Monitors*From Page 65*

from both the monitor vendor and the dealer.

Warranties are usually standard. SuperMac and RasterOps both offer three-year warranties, while most other vendors offer one-year warranties. However, issues such as dealer competence are not directly under the vendor's control.

"We had a bad experience with a RasterOps dealer, but we found a good local dealer for SuperMac," said Rob Aronson, director of imaging for USA Today in Alexandria, Va.

On the other hand, Desknet's Alexander said: "Price per value and support are best from RasterOps. You never have to wait on the phone." According to Alexander, waiting for technical support can add up for a company like Desknet, which provides technical support for the large volume of two-page displays that it sells each year.

Multimedia consultant Mann said he gets good service from a

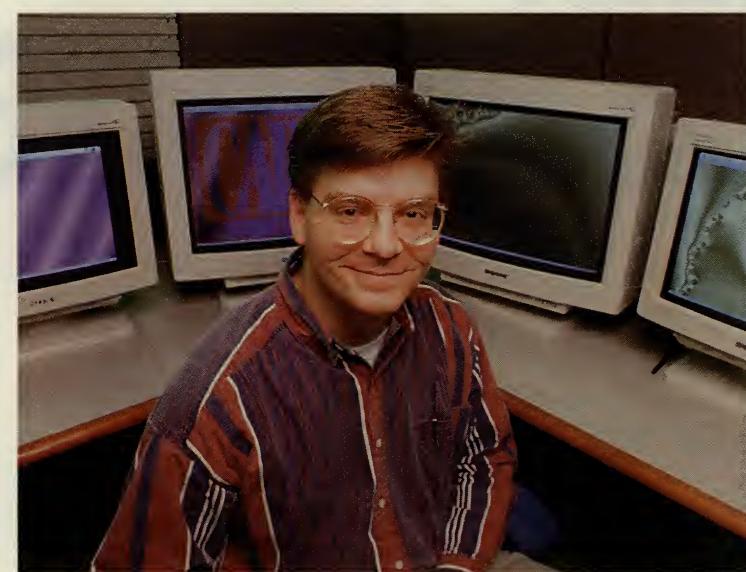
large company such as Radius. "It can afford to have the staff so that you don't have to wait on the phone," Mann said. "What you might save by going to a smaller supplier you can easily lose by waiting for support."

Prices. Few people buying two-page displays are looking strictly at price. They look for the best price-performance ratio, something that is hard to evaluate in light of so many opinions about quality and support.

"There is no point in buying high-end color monitors for spot color for approval; we do that kind of work on the calibrated color pre-press workstation," said Paul Herzig, systems manager for P&H Photo Composition Inc., a type, color and high-end composition shop in Minneapolis.

"We have some SuperMacs and a Radius, but the difference between those and our ProViews (from Mirror Technologies Inc.) is minor," he said.

Based on the Sony Trinitron



GARY SIGMAN/BLACK STAR

Andy Hullinger, Macintosh special projects leader for Capps Studios, purchased 20 large-screen Sony monitors for the company's design and production division.

picture tube, Mirror sells its displays bundled with video cards for less than the price of the monitor alone from other vendors. "If someone could prove to me that there was something appreciably better in the same price range and at the same level of service," Herzig said, "I'd buy it."

True monitor size. Not all 19-, 20- and 21-inch monitors are true two-page displays. According to experts, only 21-inch models can show two side-by-side letter-size pages at actual size, and even that's stretching the definition a bit. To confuse matters further, many 20-inch monitors (including the Trinitrons) show only 19 diagonal inches of glass.

Ultimately, the true measure of a monitor is its resolution. According to experts, the standard for true two-page displays is 1,152 by 870 pixels, which fits in a 21-inch monitor at between 77 and 79 dpi, not quite the 72-dpi standard for Apple WYSIWYG.

Most 21-inch displays are Mac-only, single-resolution displays; however, the 19- to 20-inch displays have slightly less screen real estate but more options. The standard resolution for the less expensive, single-mode 19- to 20-inch displays is 1,024 by 768 pixels at 72 dpi.

ing bit-mapped text images." Blue-ridge develops and sells the Optix document-imaging system bundled with Sigma's MultiMode 120 grayscale monitor. "Many of the documents we're moving around or viewing are scanned at 200 dpi," Ellis said. "They're decimated at 72 dpi. You can't read them."

For sites with both Macs and IBM PCs and compatibles, it's sometimes convenient to standardize on multimode monitors that can accept signals from both platforms, such as those from Mitsubishi, Nanao USA Corp., NEC, Seiko Instruments USA Inc., Sony and others.

The resolution of these monitors will depend on which Mac model you're using, the interface cable and any video board you have installed.

Large-size gray scale. While the big news and developments in monitor technology may be taking place in the 24-bit world, there are many applications that, like the Optix document-imaging system, work better in gray scale.

There are still many two-page gray-scale monitors available, and they are a relative bargain compared with their color cousins. Nutmeg Systems, which bundles its video cards with the displays, offers an upgrade path from gray to color.

Electromagnetic concerns. While all monitor manufacturers are trying to bring down the levels of electromagnetic radiation, some are using lower emissions levels as a selling point.

Sigma and others advertise that they meet the MPR II Swedish emission standard for magnetic extremely low frequency and very low frequency. According to Sony, both the new and old Trinitron picture tubes meet this specification, and most OEMs using Trinitron tubes should be MPR II-compliant.

Whether emissions, resolution, upgrade paths, color calibration or

See Monitors, Page 70

Monitoraus Rex: Giant Mac monitors for presentations

Think your 20-inch monitor is big? Try putting one of Mitsubishi Electronics America Inc.'s 37-inch, 200-pound monitors on your desk. It's sure to make your presentation more earthshaking. Or, for a slightly lighter load, there are 33-inch models from Mitsubishi and Barco Inc. and a 28-inch version from Barco.

These displays are actually too big to fit on a Macintosh but can be a hit when making a Mac-based presentation. They plug right into your Mac and behave like any other monitor, except that you can gather a crowd around to see the show.

Macromedia Inc., the multimedia software developer in San Francisco, was one of the first customers to receive a Mitsubishi presentation monitor in 1987, and it has been using them extensively ever since. Theresa O'Brien, a marketing manager at Macromedia, said she takes the 33-inch Mitsubishi display to all trade shows. "It's the only monitor that can give me that kind of resolution in a trade-show environ-

ment," she said. Macromedia uses heavier, 37-inch displays in more-permanent locations for training and conferences.

The alternatives to large presentation monitors are projectors of various kinds, but Harold Mann, principal of Mann Consulting, a multimedia consulting company in San Francisco, prefers his Mitsubishi monitor.

"I'm doing presentations where we have 15 minutes to set up," Mann said. "It can take forever to get the alignment on a projector correct."

Also, Mann doesn't like to turn the lights off during presentations: "It's an invitation to sleep," Mann said. "I can't overemphasize the importance of making eye contact with the audience."

Mann also takes full advantage of the capability to use multiple video sources as well as both Macs and IBM PCs and compatibles. But he said 15 people is the limit for viewing a single monitor. After that you need multiple displays or a larger-screen projector. — By Clay Andres

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*Mac LC, Mac II or Quadra cable adapters available at no charge from your dealer.



Monitors

From Page 68

some other factor is your key criteria, if you find a display with unique features or a combination of features you need, your decision is probably made.

As always, price may be the deciding factor. But with so many similar monitors, the final choice may fall on an intangible: perceived looks, reputation for support or a local dealer that you trust. □

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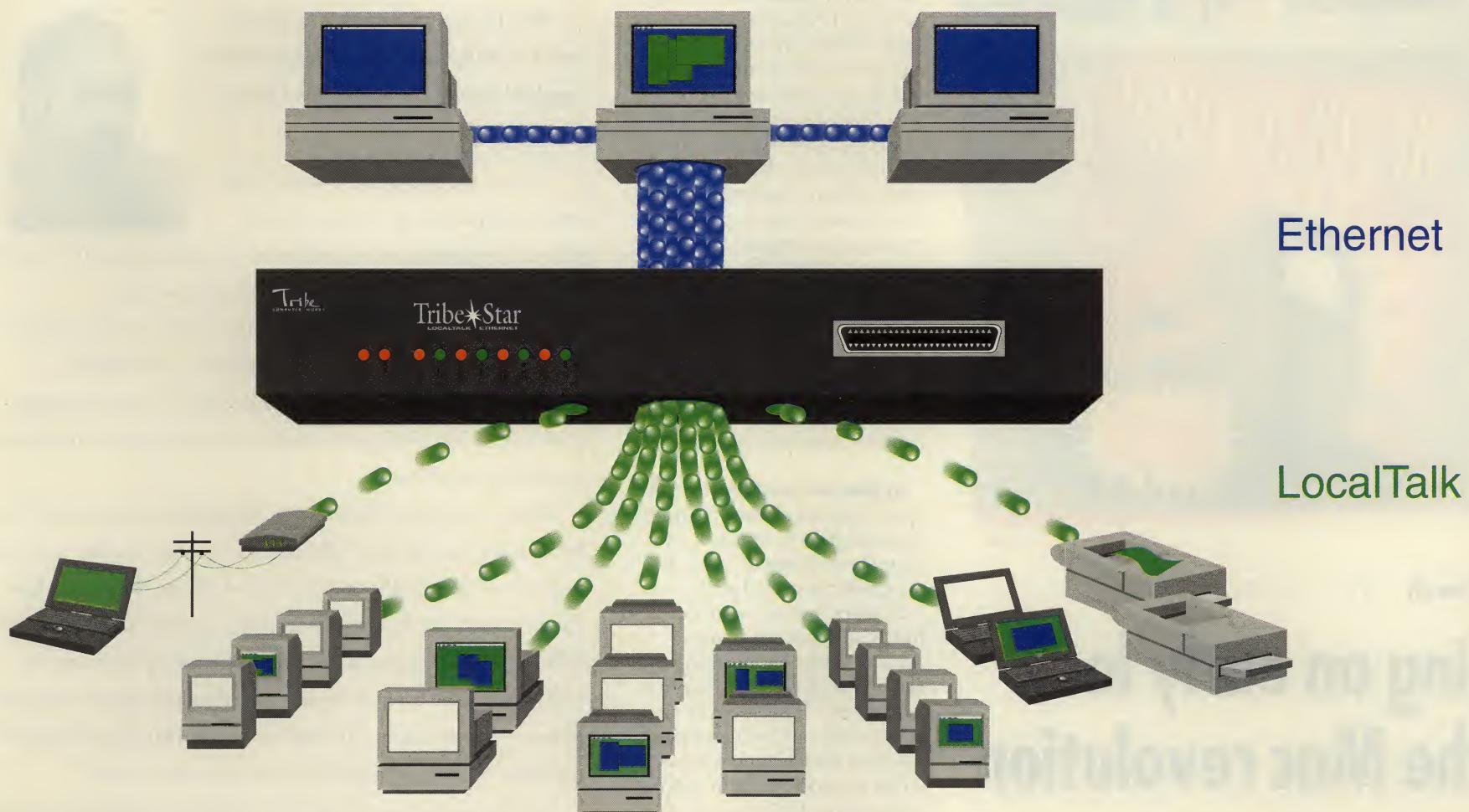
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Question: What is TribeStar?

An AppleTalk network hub with eight LocalTalk ports and one Ethernet port. TribeStar™ can handle eight simultaneous full-speed connections between LocalTalk and Ethernet. A router or hub-router combination can only handle one at a time.

Question: What makes it so smart for Ethernet migration?

Because in one box you get both packet-switched LocalTalk and high-speed Ethernet connectivity. You can mix LocalTalk and Ethernet in the most sensible way—and get eight times the throughput of a router. How does it work? With a router, the packet stream between LocalTalk and Ethernet looks like this:



With five microprocessors and an 80 Mbps backplane, TribeStar builds a roadway between LocalTalk and Ethernet that is eight times wider:



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In a LocalTalk network of 15 to 30 users, it's not unusual to have eight people concurrently accessing Ethernet-based network services. In this case, TribeStar is about four times faster than a hub-router combination. (See graph.)

All Ethernet	12 sec.
TribeStar	22 sec.
Hub+router	85 sec.

Time to complete eight simultaneous downloads of a 200 KB file from a Macintosh IIxi running AppleShare.

Question: Impressive. Where should I use TribeStar?

Use TribeStar whenever you want to integrate LocalTalk and Ethernet. And use it to give LocalTalk users fast access to network services. TribeStar requires virtually no configuration and comes with SwitchMonitor management software. The simplest, most powerful solution, it's a great way to get started with Ethernet.

Question: How much is it?

TribeStar lists for \$1795. Compare the alternatives:

TribeStar	\$1795
Hub+router	\$3290
All Ethernet	\$8840

Approximate cost for a 25-node network. All prices are list.

Question: Wow. Why should I ever buy a router or a StarController?

Hmmm. Can't think of any reasons.

Question: OK, must be about time for the phone number.

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MacInTouch RIC FORD

Taking an early look at the Mac revolution

A major change in processors usually means the end of a computer era, and Apple is about to switch from the venerable 680x0 to the PowerPC. What happens to us?

ISSUES & TRENDS

Turn, turn, turn. The revolution has begun. At the introduction of the Centris line, Apple threw Macintosh prices into turmoil. The IIvx lost one-third of its dollar value just months after its debut, and the Centris 610 shredded the previous relationship between price and performance. The LC III cut into the line well below the cost of the discontinued IIci with equivalent speed, and used-Mac values are in disarray.

These changes, although dramatic, are only precursors to a much larger economic transformation, which is driving us from today's Macintoshes toward new systems based on the PowerPC. In economic terms, the 680x0 is rapidly becoming obsolete, and the PowerPC is Apple's only hope for

maintaining its ownership of a solid piece of the systems market. With our investments in existing Mac technology, we are in for a tumultuous time in the months ahead.

Dollars and sense. Two basic questions help focus the issues: Does the system effectively handle the work you need done, and can you afford its cost?

Right now, the new Mac models are handling normal tasks quickly and effectively at a lower cost (although the savings are offset slightly by extra support costs for System 7.1 and enablers).

We can be reasonably confident Apple will not cut prices again in the next few months, so it makes sense to buy new Macs at the current price levels to run existing applications.

But a year from now, the Power-

Comments on MacInTouch are welcome at 7 Parmenter Ave., Maynard, Mass. 01754. Phone (508) 897-2621. Address electronic mail to RICFORD on AppleLink or MCI Mail; to 72511,44 on CompuServe; or on the Internet to 72511.44@compuserve.com. Join us on-line in the MacWEEK Forum at location ZMC:MACWEEK on CompuServe or ZiffNet/Mac.

PC Macs should be ready. Will prices on 680x0 Macs suddenly drop? As we approach that point, buying decisions get tricky.

PowerPC systems will leave existing Macs behind in raw performance, but PowerPC manufacturing costs should not be much higher. And Apple will have to keep its PowerPC retail prices down to stay competitive with the rest of the market.

But that raw performance is useless unless it can be applied to your own applications. Any emulation mode will carry the penalty of reduced performance, and it's likely to cause some compatibility problems even if Apple does an outstanding job of implementation.

The essential issue is how quickly applications we need will become available and reliable in native PowerPC form and what the conversion costs will be, both in purchase price and in support.

In Mac we trust? After developers choose platforms for development and delivery, customers later get to choose platforms based on these applications (and price).

It comes down to a matter of trust. Can developers count on Apple to deliver the tools and markets they need as the Mac migrates to PowerPC? If Apple can do this, we can count on those developers to give us the applications we need on the PowerPC platform. If Apple fails to deliver the developers, the Mac will go the way of the Apple II.

The next event in the revolution is the Apple Worldwide Developers Conference next month. With the changes blowing our way, this is one conference to watch carefully.

BUGS & TIPS

Technicolor III. A new option lets the Mac LC III handle color images at 16 bits of color depth on a standard monitor without even installing optional video RAM.

Tucked away in the LC III manual is a description of a video mode that trades a little screen area for the extra depth, which works far better than eight-bit color with QuickTime video. It also offers much more realism for color photographs.

The option is set in the Monitors control panel. It reduces the screen area from the standard 640 by 480 pixels to 640 by 400 pixels (the area of a PowerBook screen). This allows the standard 512 Kbytes of video RAM to support thousands of colors, instead of 256 colors in the normal mode.

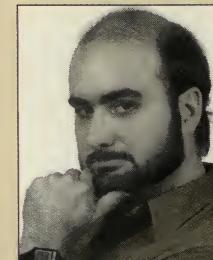
More ROM cleanliness. In the April 5 column about enabling 32-bit addressing on older Macs, I mentioned reports of problems writing to high-density floppies with accelerators from DayStar

Ask David Ramsey

What cannot be found?

Q. When I try to paste in a custom icon for my hard disk, the Mac says "The command cannot be completed because it cannot be found." What's that about?

A. System 7 handles custom icons in one of two ways depending on whether the icon you're altering belongs to an application (or anything else with a bundle, such as a control panel) or a document, folder or disk.



If you paste a custom icon into the Get Info window of an application, the new icon is stored in a part of the application itself called the resource fork. Things such as folders, hard disks and many documents don't have resource forks, so the custom icon information is stored in an invisible file called Icon.

When you customize a folder's icon, the Icon file is created inside the folder; when you customize a disk icon, the Icon file is created at the root (top) level of the disk. After making the Icon file, the Finder sets a Use Custom Icon bit for the file, folder or disk in question. If you delete the Icon file, the Finder gets confused because something has its custom-icon bit set, but there's no Icon file. This is what has happened with your disk; at some previous time, the disk had a custom icon, but the Icon file containing it was erased and this file is what "cannot be found."

The solution is to use a disk utility to copy another Icon file to the root level of your disk. Then you can paste in the new icon you want.

Q. I just added 16 Mbytes of memory to my IIci and now the About This Macintosh window says my system software occupies ... blah, blah, blah.

A. I've covered this before, but the recent influx of inexpensive, high-powered Macs has resulted in this question coming up a lot of late.

Open the Memory control panel and turn on 32-Bit Addressing, then restart. If you don't do this, your Mac can't use more than 8 Mbytes of RAM, and any RAM installed over 8 Mbytes is shown as being used by the system software. In reality, however, the extra RAM is not being used at all.

Please send questions to David Ramsey on CompuServe: 76702,335 or to Ask David Ramsey, c/o MacWEEK, 301 Howard St., 15th Floor, San Francisco, Calif. 94105.

Digital Inc. of Flowery Branch, Ga.

It turns out that there was a bug in the ROMs of 50-MHz accelerators shipped during a limited period of time. DayStar will update the accelerator free of charge if you have the problem.

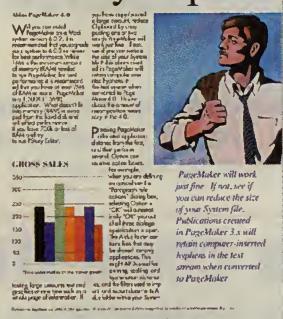
DayStar reports that it has found no compatibility problems between Apple's 32-Bit System Enabler and its accelerators, except that some customers have had to reset their parameter RAM to get successful start-ups after installing the enabler. (Note that resetting parameter

RAM switches the machine back to 24-bit addressing.)

Timing tweaks. Sherry London, a system operator on ZiffNet/Mac, reports that some of RasterOps Corp.'s 24STV video boards can run into "timing" problems with the new Centris and Quadra 800 machines. Moving the board to a different slot worked for her, and the company offered to exchange the board. RasterOps is at (801) 226-5265 or (800) 729-2656; fax (801) 226-4010. □

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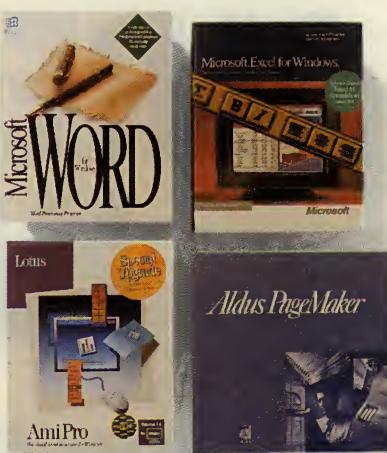
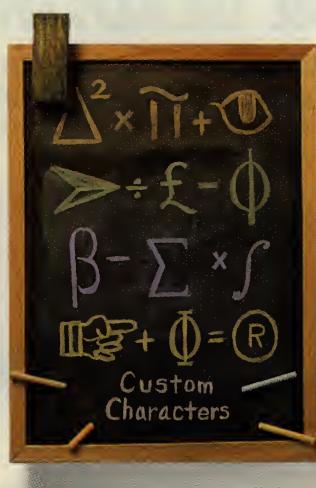
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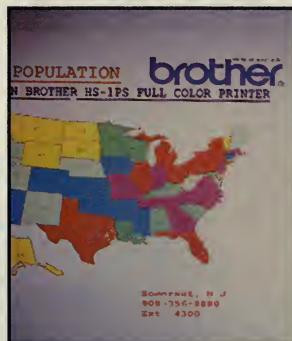
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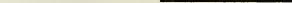
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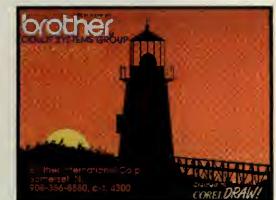
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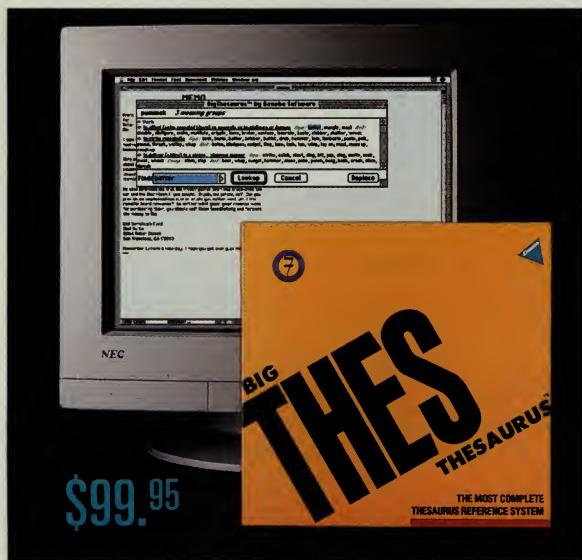
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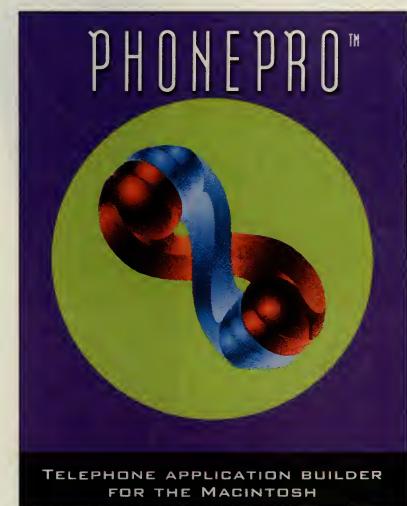
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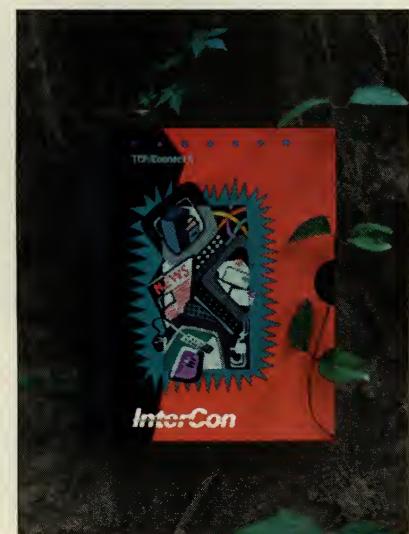
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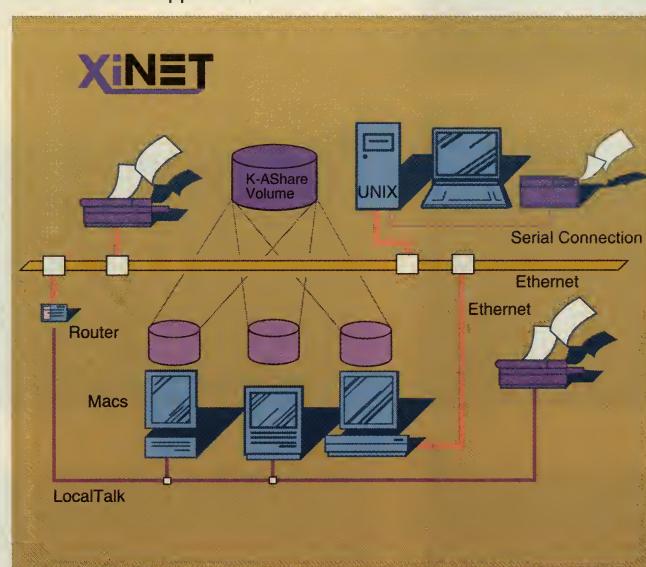
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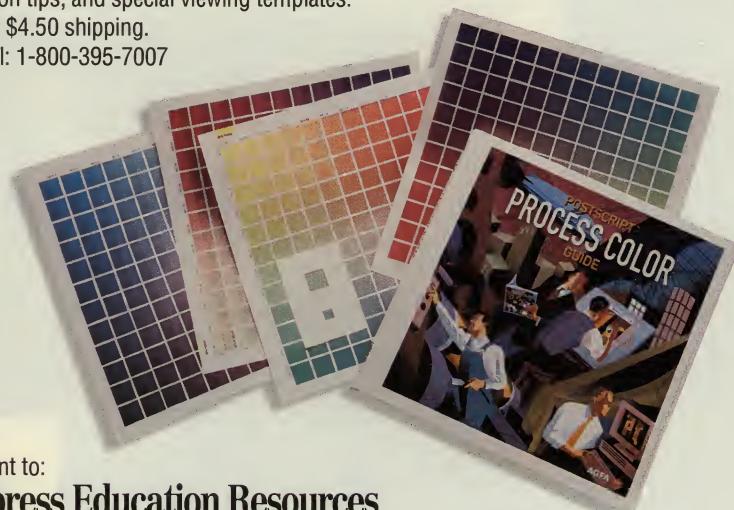
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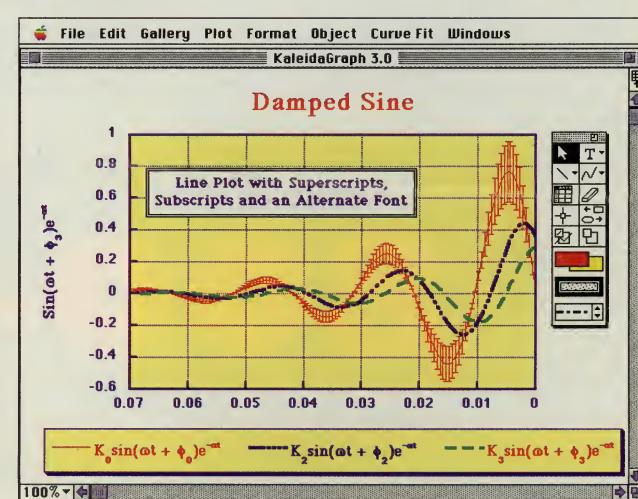
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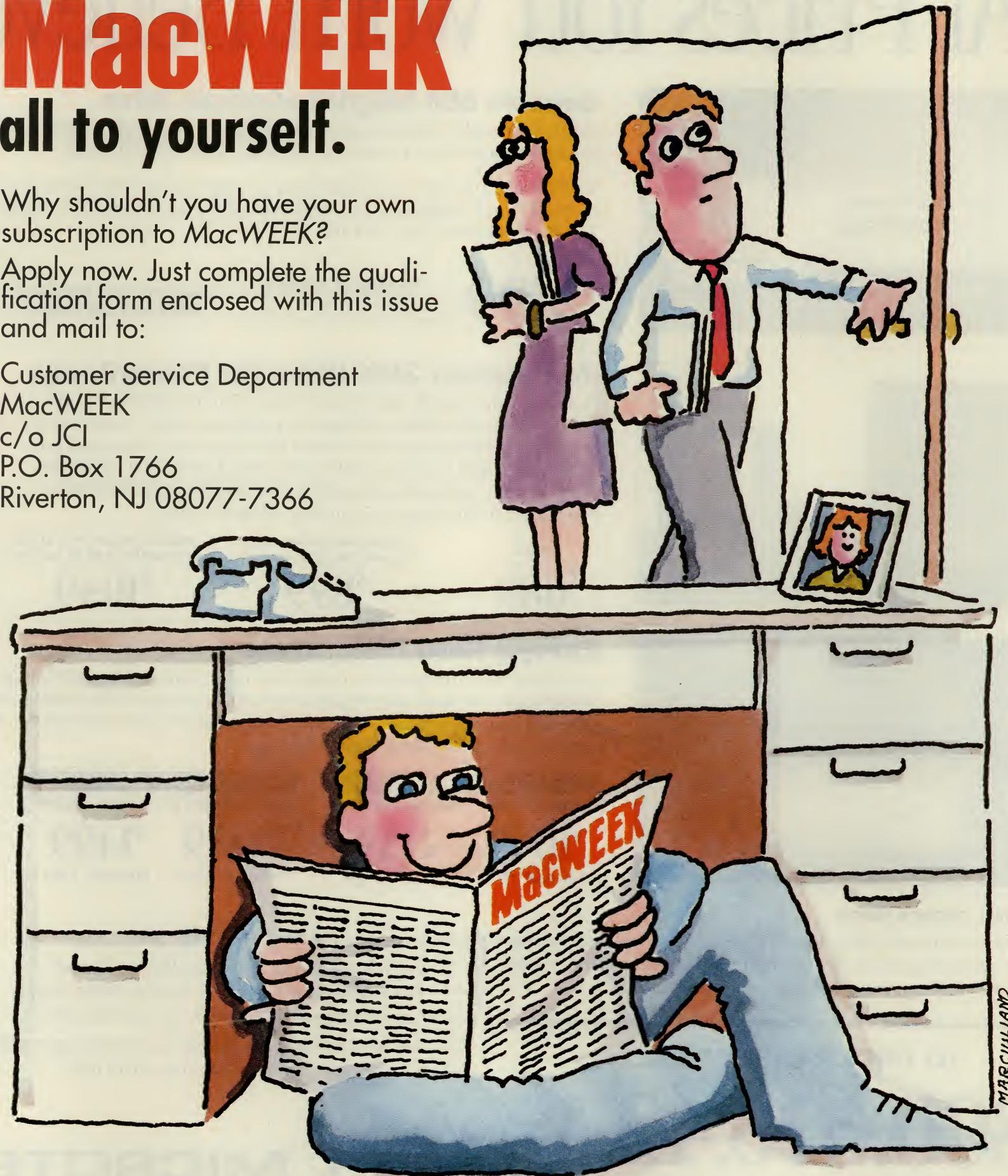
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Hard Drives

CONNER

	Unformatted Capacity	Access Time	Internal	External
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42 mb LPS	17 ms	\$168	\$228	
85 mb LPS	17 ms	\$188	\$248	
120 mb LPS	12 ms	\$258	\$308	
170 mb LPS	12 ms	\$268	\$328	
212 mb LPS	9 ms	\$358	\$409	
540 mb	8.5 ms	\$868	\$928	

QUANTUM

GO·Drive 2.5" Hard Drive (All Quantums - 2 year Warranty)				
160 mb	17 ms	\$499	\$599	
ELS Series (3.5" Low Profile and Low Power Drives)				
85 mb	17 ms	\$199	\$259	
127 mb	17 ms	\$255	\$314	
170 mb	17 ms	\$279	\$339	
LPS Series (3.5" Low Profile and Low Power Drives)				
240 mb	10 ms	\$359	\$419	
525 mb	10 ms	\$889	\$955	
Prodrive Series (3.5" Half Height Drives)				
1.0 Gig	10 ms	\$1325	\$1385	
1.2 Gig	10 ms	\$1479	\$1539	

TOSHIBA

3.5" & 2.5" Disk Drives (2 year Warranty)				
2.5" 213 mb	12 ms	\$548	\$648	
3.5" 830 mb	12 ms	\$1029	\$1089	
3.5" 1.2 Gig	12 ms	\$1329	\$1389	

FUJITSU

3.5" & 5.25" Disk Drives (5 year Warranty)				
3.5" 520 mb	9 ms	\$788	\$888	
3.5" 1.1 Gig	8.5 ms	\$1548	\$1599	
5.25" 1.2 Gig	11.5 ms	\$1188	\$1288	
5.25" 2.06 Gig	11.5 ms	\$2119	\$2219	
5.25" 2.4 Gig	11.5 ms	\$2274	\$2395	

SEAGATE

3.5" Half Height Drives (1 and 5 year Warranties)				
1.2 Gig	10.5 ms	\$1339	\$1399	
Wren and Elite Series (5.25" Full Height Drives)				
Wren 7 1.2 Gig	15 ms	\$1199	\$1389	
Wren 8 1.6 Gig	15 ms	\$1649	\$1749	
Wren 9 2.1 Gig	12.5 ms	\$1858	\$1949	
Elite 1 1.6 Gig	11.5 ms	\$1799	\$1899	
Elite 2 2.4 Gig	11 ms	\$2499	\$2599	
Elite 3 3.4 Gig	11 ms	\$3399	\$3499	

Media

Model	QTY	1 SPK	10PK	Model	QTY	1 SPK	10PK
SyQ44 cart	\$67	\$65	\$63	SyQ 88 cart	\$107	\$104	\$99
128mb OPT	\$42	\$39	\$37	256mb OPT	\$86	\$84	\$79
60mm DAT	\$17	\$14	\$12	90mm DAT	\$19	\$17	\$14

Modems

PROMETHEUS

	Price
Ultima Home Office ext 14.4/14.4SR Fax w/ V.42 bis & voice	\$398
Promodem 144i Internal for Powerbook 14.4/14.4SR Fax w/ V.42 & V.42 bis	\$268
Promodem 144e ext 14.4/14.4 SR Fax w/ V.42 & V.42 bis	\$268
Promodem 24e ext 24/96SR Fax w/ V.42 & V.42 bis	\$128
Promodem Mini 2400 2400 BPS mini, data only	\$79

ZOOM TELEPHONICS

All units come with Microphone LT Software	Price
Faxmodem PBK for Internal Powerbook 96/48 SR Fax w/2400 BPS Modem	\$99
Faxmodem PKT Portable 96/48 SR Fax w/2400 BPS Modem	\$109
Faxmodem FXV V42 bis/MNP5/2400 BPS, 96/96 SR Fax	\$139
Faxmodem VFX V.32 V.32 bis,14.4 data & fax, V.42 bis/MNP5	\$269



CD ROMS
499.00



Toshiba 3401 - SCSI II, 200ms multisession, DualSpeed, SCSI-II

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Texel DM-3024 - SCSI II, 265ms multisession, DualSpeed, SCSI-II

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- World Atlas • Multimedia World Fact Book

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- Publish It! 2.0 with Clip Art Fonts • Color it!

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UMAX

All Scanners includes free software

Model	Price
UC630 - Color w/free Photoshop v2.5	\$1078
UC1200s - Color w/free Photoshop v2.5	\$2948
UC840 - Color w/free Photoshop v2.5	\$1248
Transparency Unit	\$698
Auto Document feeder	\$398
UG600 - Greyscale w/free Typewriter OCR, OFOTO & Publish It	\$848

Accelerators

DAYSTAR DIGITAL

Model	Without FPU	With FPU
33 MHZ Powercache	\$375	\$465
40 MHZ Powercache	\$545	\$635
50 MHZ Powercache	\$714	\$845
Powercache Adapter	\$40	
Fast Cache IISi	\$279	\$349
Fast Cache IICi		\$199
Fast Cache Quadra		\$249
Fast Cache Q 950		\$375
33 MHZ Turbo 040		\$1345
Fast Cache Turbo 33-128k		\$335
Charger for Photoshop		\$799

Optical & DAT Drives

Includes one free disc (1 year Warranty)

128 mb Panasonic Optical	39 ms	\$888
128 mb Epson Optical	29 ms	\$988
256 mb Most Optical	31 ms	\$1648
Unformatted Capacity Includes free 90m Tape & DIO Backup or Retrospect software		
WangTek 2.1 Gig DAT	\$998	\$1098
WangDat 5.0 Gig DAT	\$1398	\$1498

SyQuest

Unformatted Capacity	Access Time	Price
Includes one free cartridge (2 year Warranty)		
44 mb External	19 ms	\$378
88 mb External	19 ms	\$478
88C mb External	19 ms	\$578

Memory

Model	60 NS	70 NS	80 NS	Model	60 NS	70 NS	80 NS

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APS Technologies Price Breakthrough!

APS 128MB Magneto-Optical just \$999

Internal for
Quadras

\$969



Proven MO technology avoids data integrity problems common to other removable drive systems. Now, transport, store and access multi-megabyte documents on low-cost, high-density MO cartridges with Epson's Magneto Optical Drive system. Epson's MO stores 128MB on durable \$49 diskettes. Carry them in your pocket or send them to your output service—these cartridges can take a beating.

Three-pass write assures data security

With the dependable security of a three-pass write, keep copies of scanned artwork, multimedia or large documents for future reference or emergency back up.

Easy-access archiving

Based on Epson's OMD-5010 mechanism, this state-of-the-art drive supports an average seek time of 35 milliseconds and sustained read times approaching 700KB per second.

The three-pass write occurs at approximately 250KB per second in a Mac environment, making it among

the fastest 128MB MO units currently shipping.

This Epson MO is fully compatible with all ISO and ANSI specifications, so cartridges can be readily accessed on other-brand MO drives.

In a specially designed external enclosure (with extra cooling for reliable operation), APS's 128MB Epson MO is priced at \$999, including one MO cartridge. An internal version for Mac Quadra 900 or 950 is \$969. Additional cartridges are available at \$49 each—a package of five for \$240 or a package of ten for \$400.

The APS 128MB Epson MO carries a one-year manufacturer's warranty and includes APS's award-winning service and unlimited toll-free technical support. Plus, every APS drive includes Dantz Development's easy-to-use backup software DiskFit Direct, a \$49.95 value.

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• Disk-for-disk replacement warranty • SyQuest, most Quantum, Maxtor and DAT drives are warranted for two years. Maxtor I.2, 1.7 GB and Fujitsu drives are warranted for five years. WREN, Quantum 2.5" drives, TEAC drives, all CD-ROMs, MOs and SyQuest carts are warranted for one year. Toshiba 830 is warranted for three years.

• Prices and specifications subject to change without notice. Refused orders subject to restocking fee.

• All our hard drives include brackets, cables, cords and LEDs required for operation with the specified Macintosh. All hard drives from APS Technologies come preformatted with Apple's System 7.0 software, at least 9.2 MB of compacted publicly-distributable software, and APS Technologies' ALLIANCE POWER TOOLS SCSI formatter/hard disk partitioner.

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External Q 240

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External MX 213

\$369



APS Quantum MW EDITOR'S CHOICE

MB	INTL	EXTL
240	\$339	\$419
525	899	979
1225 ⁵	1489	1559

⁵5-year warranty

APS Quantum MW EDITOR'S CHOICE

MB	INTL	EXTL
85	199	269
127	229	299
170	259	319

APS Maxtor MW EDITOR'S CHOICE

MB	INTL	EXTL
120 ²	\$229	\$309
213 ²	299	369
340 ²	569	639
540 ²	969	1069
1240 ³	1599	1699

²2-year warranty ³3-year warranty

APS SCSI Boy \$29



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APS Micropolis

MB	INTL	EXTL
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1.1G	1499	1599
2.0G	2699	2799

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APS Fujitsu MW EDITOR'S CHOICE

MB	INTL	EXTL
520	\$799	\$899
1.2G 5.25"	1249	1349
1.2G 3.5"	1699	1799
2.0G	2299	2399

Includes 5-year warranty

APS Quantum MW EDITOR'S CHOICE

PowerBook Go·Drives	MB	INTL	EXTL
80GRS	\$349	\$499 [†]	
120	399	529 [†]	
160GRS	549	679 [†]	

[†]Battery-powered Companion Case for the PowerBook



APS PowerBook Companion Cases MW EDITOR'S CHOICE

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AC/DC (Battery-Powered)	169

APS Technologies

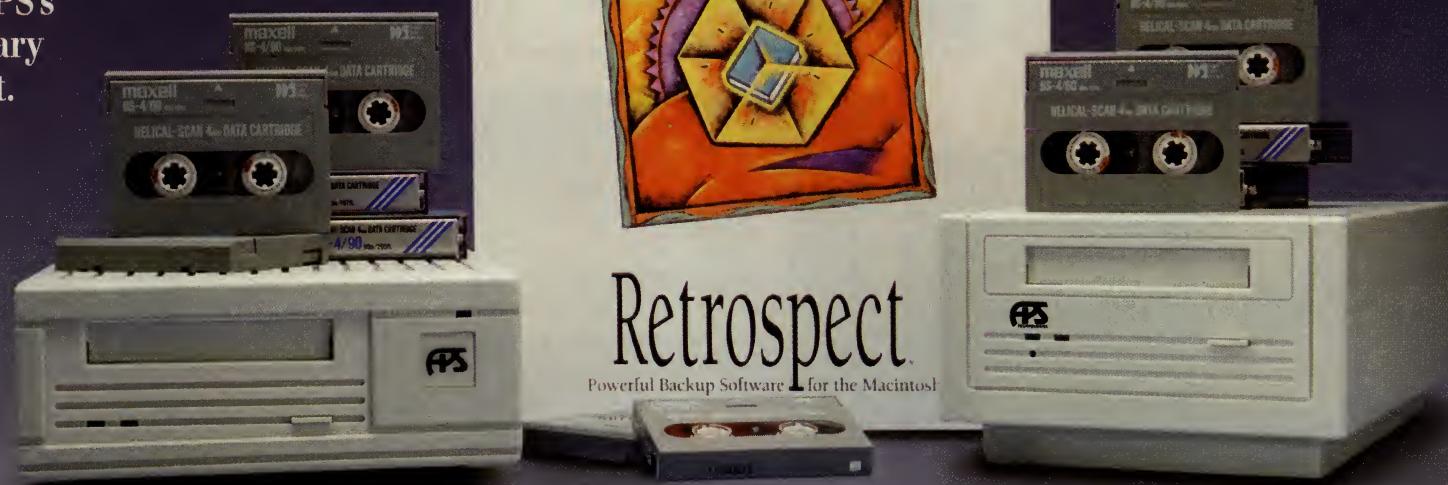
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Mechanism, the fastest DAT unit available, the APS Turbo DAT is more than 20% faster than all other DAT units. With a two-year warranty and 80,000 hr MTBF you'll probably never need APS's legendary support.



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APS Toshiba

MB	INTL	EXTL
213	\$599	\$729*
1.2G	\$1099	\$1199

*Battery-powered Companion Case for the PowerBook

CD-ROM	3401-E1	\$599	\$649*
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Fastest CD-ROM Drive Available
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*Includes Four-Disc APS CD Bundle



APS Modems \$69 for PowerBooks

2400 baud (9600 send fax/4800 receive fax)



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14,400 baud v.32 bis	\$349

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APS SyQuest

Model	INTL	EXTL
SQ555	\$349	\$389
SQ5110	469	489
SQ5110c	569	599

The 5110c reads & writes 44 & 88 carts!
SyQuest Cartridges 44/88.....\$65/100
Preformatted Cartridges 44/88.....\$70/105

APS TEAC

155 MB Tape Back Up	\$499
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APS DAT

Model	INTL*	EXTL
APS Turbo DAT	\$1399	\$1499
APS DAT	1099	1199

*Internal models for Quadra 900 & 950

All APS DAT Drives Include Retrospect by Dantz

APS I28MB MO

Model	INTL	EXTL
Epson	\$969	\$999
I28MB Magneto Optical Drive		

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• Prices and specifications subject to change without notice. Refused orders subject to restocking fee.

*All our hard drives include brackets, cables, cords and LEDs required for operation with the specified Macintosh. All hard drives from APS Technologies come preformatted with Apple's System 7.0.1 software, at least 9.2MB of compacted publicly-distributable software, and APS Technologies' ALLIANCE POWER TOOLS SCSI formatter/hard disk partitioner.
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SyQuest

Model

External SyQuest 44mb (One Cartridge Inc.)	\$385
External SyQuest 88mb (One Cartridge Inc.)	\$485
External SyQuest 88mb C* (One Cartridge Inc.)	\$585
External SyQuest 105mb (One Cartridge Inc.) NEW!	\$745
Internal 44mb SyQuest (for Quadra 900&950)	\$345
Internal 88mb SyQuest (for Quadra 900&950)	\$465
Internal 88mb C SyQuest (for Quadra 900&950)	\$555
External SyQuest Dual 44mb (One Cartridge Inc.)	\$725
External SyQuest Dual 88mb (One Cartridge Inc.)	\$895
External SyQuest Dual 44/88mb (One 44 & One 88 Cartridge)	\$895
External SyQuest Dual 88C mb(One Cartridge Inc.)	\$1075
External SyQuest Dual 44/88C mb(One 44 & One 88 Cartridge)	\$995
SyQuest 44mb Cartridge/10 Pack	\$63/\$620
SyQuest 88mb Cartridge/5 Pack	\$97/\$480
SyQuest 105mb Cartridge	\$79

All SyQuest Drives come with FWB™ HDT Formatting Software. SyQuest carries a TWO year Warranty on Drives and ONE year on Cartridges.

*READS AND WRITES 44 AND 88 CARTRIDGES. Does not format 44 cartridges.

MAGNETO-OPTICAL

TEAC

Model	Speed	Size	External
128mb	45ms	3.5"HH	\$979
128mb cartridges (Tosoh)			\$39

RICOH

Model	Speed	Size	External
128mb	45ms	3.5"HH	\$1075
650mb	28ms	5.25"FH	\$2345
128mb/650mb Cartridge			\$39/99

Maxtor

Model	Speed	Size	External
Tahiti IIM	35ms	1.0gb	\$3175
1.0gb Optical Glass Cartridge			\$225

All MO drives come with FWB HDT software, one MO cartridge and have a ONE year Warranty.

TAPE BACK-UP

ARCHIVE

Model	External
2.0gb Standard	\$1099
4.0gb - 8.0gb Compression Turbo	\$1499
90m/60m Tape	\$19/\$16

TEAC

Model	External
150mb Tape Backup Drive	\$469
600mb Tape Backup Drive	\$669
600mb / 150mb Tape Cassette	\$25/\$20

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Powerbook 160 4/40 - 4/80 - 4/120	\$2319/\$2659/\$2999
Powerbook 180 4/80 - 4/120	\$3919/\$4269
Powerbook 165 Color 4/80 - 4/120	\$3239/\$3589
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LC III 4/80 - 4/160	\$1289/\$1429
IIvx 4/80 - 4/230 - 5/80 w/CD-Rom	\$1499/\$1799/\$1999
Centris 610 4/80 w/o Ethernet	\$1679
Centris 650 4/80 w/o Ethernet	\$2449
Centris 650 8/80 with Ethernet	\$2899
Qudra 950 8/0	\$4669

Qudra 800 8/230 - 8/500

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Powerbooks:	
PowerBook Cables (HDI 30-25 or 50)	\$35
Radius PowerView	\$489
External Battery Recharger for PowerBook	\$149
PowerBook Battery	\$79
PowerPad-Sophisticated Circuits	\$79
Auto Power Adapter/Empire Engineering	\$89
GCC WriteMove II Printer	\$499
AE AxCell (Cellular Phone Interface)	\$270

TOSHIBA

Formatted Capacity	Speed	Size	Internal	External
877mb	12.5ms	3.5"HH	\$1035	\$1095
1.23gb	12.5ms	3.5"HH	\$1335	\$1395
213mb	12ms	2.5"PB	\$545	\$645
600mb NEW!	200ms	3.5"HH	\$495	\$555

Dual Speed/Photo-CD/Multisession compatible
Toshiba carries a THREE year Warranty on drives. ONE year Warranty on CD Rom. FWB CD Rom Tool Kit Formatting Software Included.

HARD DRIVES

FUJITSU

Formatted Capacity	Speed	Size	Internal	External
513mb SPECIAL!	9ms	3.5"TH	\$799	\$859
1.0gb	9ms	3.5"HH	\$1545	\$1605
1.03gb	15ms	5.25"FH	\$1245	\$1345
1.65gb	15ms	5.25"FH	\$2245	\$2345
2.05gb	12ms	5.25"FH	\$2445	\$2545

FIVE year Warranty. FWB™ HDT Formatting Software Included.

CONNER

"An Apple Authorized Brand"

Formatted Capacity	Speed	Size	Internal	External
82mb	17ms	3.5"TH	\$195	\$255
160mb	13ms	3.5"TH	\$275	\$335
206mb	12ms	3.5"TH	\$365	\$425
515mb	10ms	3.5"HH	\$885	\$945

TWO year Warranty. FWB™ HDT Formatting Software Included.

MICROPOLIS

"Novell Certified"

Formatted Capacity	Speed	Size	Internal	External
698mb	10ms	3.5"HH	\$1235	\$1295
1.05gb	10ms	3.5"HH	\$1335	\$1395
2.1gb	12ms	5.25"FH	\$2695	\$2795

Fast SCSI-2 Drives. FIVE year Warranty.

FWB™ HDT Formatting Software Included.

Maxtor

Formatted Capacity	Speed	Size	Internal	External
120mb	15ms	3.5"TH	\$225	\$285
203mb	15ms	3.5"TH	\$325	\$385
325mb	15ms	3.5"HH	\$575	\$635
520mb	9ms	3.5"HH	\$935	\$995
1.15gb	9ms	3.5"HH	\$1495	\$1555
1.0gb	13ms	5.25"FH	\$1255	\$1355
1.43gb	13ms	5.25"FH	\$1555	\$1655

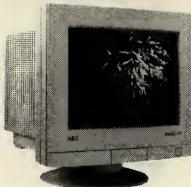
TWO and THREE year Warranty on 3.5" Drives and FIVE Years on 5.25" Drives. FWB™ HDT Formatting Software Included.

Mac&PC believes in first-class quality and customer service. As part of our commitment, we offer the following:

- All of our storage drives are pre-tested before shipment, to assure that your product will be in working order.
- Should your product not be perfect, we offer toll-free tech support at 800-392-5818.
- There

NEC

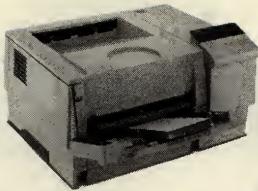
MultiSync 3FGx - 15" Monitor	\$615*
MultiSync 4FG - 15" Monitor	\$735*
MultiSync 5FG - 17" Monitor.....	\$1305*
MultiSync 6FG - 21" Monitor	\$2355
FG8x 8-bit board	\$645
FG24x 24-bit board	\$1205
FG24xp 24-bit board.....	\$505
CD-Express	\$355
CD-ROM CDR-74.....	\$625
Multi-Media Gallery	\$805
SilentWriter 95F Printer.....	\$1125**
SilentWriter 95FX Printer	\$1475**
SilentWriter 97F Printer	\$1505**
SilentWriter 97FX Printer	\$1815**
ColorMate PS-40 Color Printer	\$4399**
2mb upgrade for printers	\$95

**NEC MultiSync 5FG Monitor**

- 17" Multi-Frequency Color Monitor
- AccuColor Control System
- Up to 1024x768 resolution

**\$1205***

*After \$100.00 Mail-In Rebate with purchase of 24xp Color Display Interface Card and 15" or 17" FG Color Monitor.

**NEC SilentWriter Model 95f Laser Printer**

- PostScript Level 2
- Envelope feeder and cassette included
- 6ppm/300dpi/2mb RAM

**\$1125****

**After \$250.00 Mail-In Rebate

**NEC CDR-74 CD-ROM Reader**

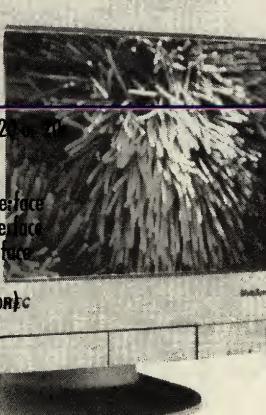
- 280ms access time
- Photo-CD/Multisession compatible
- 2-year warranty

**\$625**

— Offers end 4/30/93 —

VIDEO**RasterOps**

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20" Color Hitachi MultiScan	\$1339
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24 SX Interface	\$619
24 XLI Interface	\$1929
Paintboard 24	\$1549
Paintboard LI	\$829
CorrectPrint 300I	\$6999

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PrecisionColor 19	\$2099
PrecisionColor Pivot	\$969
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PrecisionColor 8XU Interface	\$499
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VideoVision (Presentation)	\$1999
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Rockets 33	\$1999
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ColorMax 20T - 20" Trinitron	\$2049

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Duo 210/230	\$139/\$279/\$689
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PC 1x9/4x9	

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GCC TECHNOLOGIES	
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WriteImpact 24-Pin	\$499
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AppleTalk Kit	\$49
1mb upgrade for PS-17/PS-35/Turbo	\$49
Toner Cartridge	\$49

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UC - 630 with Adobe Photoshop™ v2.0 FV	\$1089
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AGFA

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MC+LCII - Thin/10 Base T, FPU Socket	\$199

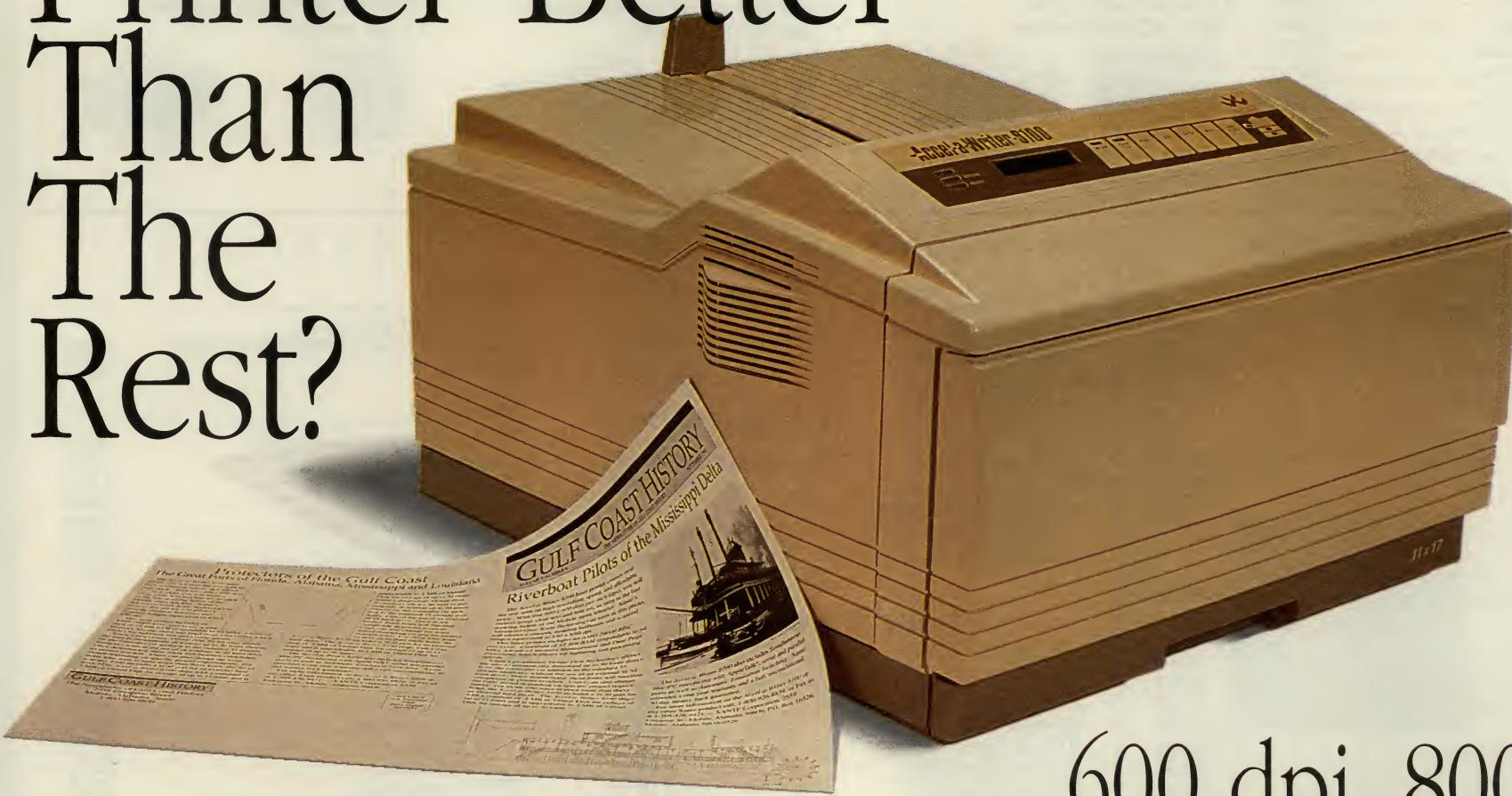
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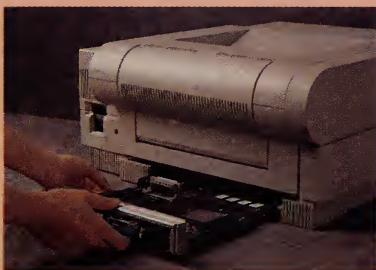
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Standard Resolution	600 x 600 dpi	600 x 600 dpi	600 x 600 dpi	600 x 600 dpi
Optional Resolution	800 x 800, 960 x 960 & 1200 x 1200 dpi	None	600 x 1200 dpi	None
Standard RAM	12 MB	4 MB	12 MB	12 MB
Virtual Disk Technology	✗†	•	•	•
Enhanced Gray Scale	✗	•	•	•
Price	\$3,995	\$3,995	\$5,495	\$4,595

† Optional Statistics as of 3/93

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The Accel-a-Writer™ is an upgrade that will turn your existing Apple® LaserWriter® or HP® LaserJet® into a true 600 X 600 dpi, high performance, PostScript® compatible SuperPrinter! You will receive near typeset quality text and line art, advanced grayscale output equal to 850 X 850 dpi, faster processing speeds, SCSI port, simultaneous Mac/PC interfacing, and an installation video - all at an affordable price.

	Accel-a-Writer™ Upgrade	LaserWriter® Pro 630	LaserJet® 4M
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Virtual Disk Technology	✗†		
Enhanced Gray Scale at 600 dpi	✗		
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- .28mm Trio dot pitch
- 65 MHz max. video bandwidth

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- .28mm Trio dot pitch
- 135 MHz max. video bandwidth

DI-NECSFG SRP \$1599
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5FG + MacFG™ 24X display interface card

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- .28mm Trio dot pitch
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- 50MHz bandwidth (typical)

DI-SI1304



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Combine the MacFG 8X or 24X with a MultiSync® FG™ monitor for the ultimate graphics subsystem for your Macintosh computer.

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42% Faster*	*Than the Epson ES-300C	
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*Than the Epson ES-300C

*Than the Epson ES-300C

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EPL-7500 POSTSCRIPT™ LASER PRINTER

Incredible PostScript Price

The powerful EPL-7500, PC World's "Best Buy" and Info World's #1 PostScript laser printer!

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B1-EPL7500

NEW LOW PRICE

PC MAGAZINE EDITORS' CHOICE
November 26, 1991
IBM LaserPrinter 10

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* E-Machines 16" Color (ColorPage T16)

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NEC 21" 6FG Color	2,429	NEC	■	■	■	■	■	■	
SuperMac 21" Mono/Grayscale	989	—				■		■	
B. SuperMac 20" (SuperMatch)	\$1,499	Hitachi			■			■	
C. NEW! RasterOps 20" Trinitron Multi-Mode	2,359	Trinitron	■	■	■	■	■	■	
* RealTech 20" Trinitron Multi-Mode	1,895	Trinitron	■	■	■	■	■	■	
NEW! Radius IntelliColor 20"	2,759	Trinitron	■	■	■	■	■	■	
RasterOps 20" Hitachi Color	1,199	Hitachi	■	■	■	■	■	■	
* NEW! SuperMatch 20-T Multi-Mode XL	2,699	Trinitron			■	■	■	■	
E-Machines 19" Color (T19 II)	2,399	Trinitron			■	■	■	■	
D. Mitsubishi 17" Diamond Pro	\$1,199	Trinitron	■	■	■	■	■	■	
E. NEC 17" 5FG Color	1,329	NEC	■	■	■	■	■	■	
F. Seiko Instruments 17" CM1760LR	1,249	Trinitron	■	■	■	■	■	■	
G. Sony 17"	1,149	Trinitron	■	■	■	■	■	■	
H. RealTech 17" Multi-Mode	995	Hitachi	■	■	■	■	■	■	
I. RasterOps 16" (RasterOps Sweet 16)	\$1,959	Panasonic			■			■	
* E-Machines 16" Color (ColorPage T16)	1,299	Trinitron	■	■	■	■	■	■	
J. NEC 15" 4FG Color	789	NEC	■	■	■	■	■	■	
K. Radius 15" Precision Color Pivot	\$959	Non-Trinitron	■	■	■	■	■	■	
L. Sigma 15" Grayscale (PageView GS)	579	Phillips	■					■	
M. RealTech 15" Grayscale	449	—		■				■	
Sigma 15" Grayscale (Power Portrait)	659	Phillips		■				■	
NEC 15" 3FGX Color	669	NEC	■	■	■	■	■		
N. Seiko Instruments 14" Color (CM1445)	\$499	Trinitron	■					■	
O. Sony 13" Color	689	Trinitron	■					■	

* shown above

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8XL	469	1152 x 870	
PaintBoard Li (24)	829	1024 x 768	■
24STV*	779	640 x 480	■
MediaTime*	1,549	640 x 480	
SUPERMAC			
Spectrum/24 PDQ Plus	\$1,549	1152 x 870	■
Spectrum/8 LCII, Ilsi	499	1152 x 870	
Spectrum/8 NuBus	419	1024 x 768	
Spectrum/24 Series IV	829	1024 x 768	■
Spectrum/8•24 PDQ	829	640 x 480	
Spectrum/8•24	579	640 x 480	
Video Spigot*	369	160 x 120	
Video Spigot & Sound*	479	160 x 120	
RADIUS			
Precision Color 24X	\$1,649	1152 x 882	■
Precision Color 8XJ	499	1152 x 882	■
Precision Color 24XK	829	1024 x 768	■
Precision Color 24XP	499	832 x 624	■
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E-MACHINES			
ColorLink DC/T (8-bit with Ethernet)	\$319	1024 x 768	■
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24

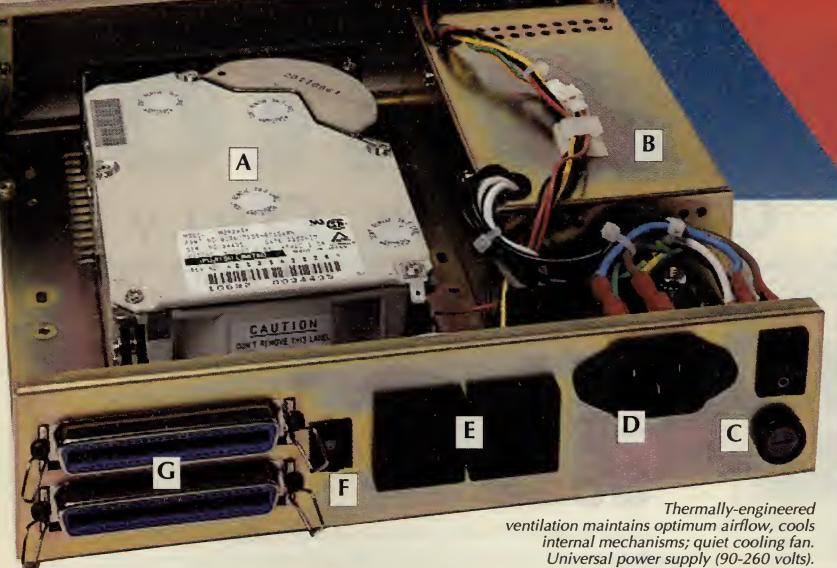
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Hard drives



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	Model number	Price (Internal)	Price (External)	Formatted Mac capacity	Avg. access time	Transfer rate*	MTBF** (hours)	Form factor	Warranty (years)
40 - 120 Mb									
Conner 85	CP-30080E	\$209	\$279	82 Mb	17 ms	1.5	150,000	3.5 LP	1
Quantum 85 ELS	ELS85	209	279	82 Mb	17 ms	1.4	250,000	3.5 LP	2
Conner 120	CP-30100	279	349	116 Mb	17 ms	1.5	150,000	3.5 LP	1
Maxtor 120	7120XT	239	309	121 Mb	15 ms	1.5	150,000	3.5 LP	2
120 - 250 Mb									
Quantum 127	ELS127	\$279	\$349	124 Mb	17 ms	1.4	250,000	3.5 LP	2
Conner 170	CP-30170E	289	359	160 Mb	9 ms	1.5	150,000	3.5 LP	1
Quantum 170 ELS	ELS170	299	369	160 Mb	17 ms	1.4	250,000	3.5 LP	2
Conner 212	CP-30200	369	439	206 Mb	12 ms	2.5 ¹	150,000	3.5 LP	1
Maxtor 213	7213	329	399	207 Mb	15 ms	2.8	150,000	3.5 LP	2
Quantum 240	LPS240	389	459	234 Mb	10 ms	1.4	250,000	3.5 LP	2
Maxtor 245	7245	359	429	246 Mb	15 ms	3.0	150,000	3.5 LP	2
Seagate 248	ST3283N	519	589	235 Mb	12 ms	3.0 ²	250,000	3.5 LP	1
320 - 570 Mb									
Maxtor 340	LXT-340	\$599	\$669	324 Mb	15 ms	2.1 ¹	150,000	3.5 HH	2
Fujitsu 425	M2623FA	899	969	405 Mb	9 ms	2.7 ¹	200,000	3.5 HH	5
Seagate 426	ST1480N	919	989	426 Mb	14 ms	2.6 ¹	150,000	3.5 HH	1
Fujitsu 520	M2624FA	939	1009	496 Mb	9 ms	2.7 ¹	200,000	3.5 HH	5
Quantum 525 LPS	LPS525	959	1029	500 Mb	10 ms	3.2 ¹	250,000	3.5 LP	2
Seagate 525	ST1581N	1029	1099	525 Mb	14 ms	4.0 ²	150,000	3.5 HH	1
Maxtor 540	MXT-540	989	1059	546 Mb	9 ms	5.5 ¹	300,000	3.5 HH	2
Conner 540	CP-3540	899	969	515 Mb	12 ms	5.5 ²	150,000	3.5 HH	1
MicroPolis 560	M2105	1069	1139	560 Mb	10 ms	5.0 ¹	300,000	3.5 HH	5
660 Mb - 1.05 Gb									
Seagate 663	ST4766N	\$1119	\$1219	645 Mb	15.5 ms	1.8	150,000	5.25 FH	1
Seagate 676	ST4767N	1519	1619	645 Mb	11.9 ms	3.0 ¹	150,000	5.25 FH	1
HP 677	97556	1469	1569	620 Mb	13.5 ms	2.8 ¹	150,000	5.25 FH	5
Quantum 700	PRO700	1249	1319	700 Mb	10 ms	2.9 ¹	350,000	3.5 HH	2
Toshiba 877	MK-438FB	1099	1169	830 Mb	12.5 ms	3.0 ¹	200,000	3.5 HH	2
Quantum 1050	PRO1050	1419	1489	1000 Mb	10 ms	2.9 ¹	350,000	3.5 HH	2
HP 1050	97558	1649	1749	987 Mb	13.5 ms	2.8 ¹	150,000	5.25 FH	5
Seagate 1050	ST11200N	1649	1719	1000 Mb	10.5 ms	5.1 ²	200,000	3.5 HH	1
1.1 - 3.6 Gb									
Fujitsu 1.2	M2266	\$1249	\$1349	1079 Mb	14.5 ms	3.0 ¹	200,000	5.25 FH	5
HP 1.2	C2247	1589	1659	1000 Mb	10.5 ms	5.3 ¹	300,000	3.5 HH	5
MicroPolis 1.2	M2112	1449	1519	1005 Mb	10 ms	5.0 ¹	300,000	3.5 HH	5
Quantum 1.2	PRO1225	1599	1669	1200 Mb	10 ms	2.9 ¹	350,000	3.5 HH	2
Seagate 1.2	ST41200N	1369	1469	999 Mb	15 ms	3.0 ¹	150,000	5.25 FH	1
Toshiba 1.2	MK-538FB	1399	1469	1200 Mb	12.5 ms	4.0 ¹	200,000	3.5 HH	3
Maxtor 1.24	MXT-1240	1549	1619	1240 Mb	9 ms	4.5 ¹	300,000	3.5 HH	3
Conner 1.3	CP-31370	2059	2129	1030 Mb	10.5 ms	6.0 ¹	250,000	3.5 HH	1
MicroPolis 1.5	M1528	2299	2399	1341 Mb	14.5 ms	2.9 ¹	150,000	5.25 FH	5
MicroPolis 1.6	M1548	2379	2479	1748 Mb	14 ms	4.8 ¹	150,000	5.25 FH	5
Seagate 1.6	ST41651N	1899	1999	1352 Mb	15 ms	4.0 ²	150,000	5.25 FH	1
Fujitsu 2.0	M2652	2299	2399	1752 Mb	11 ms	4.8 ²	200,000	5.25 FH	5
Seagate 2.1	ST42100N	1999	2099	1900 Mb	12.9 ms	3.9 ²	150,000	5.25 FH	5
Fujitsu 2.4	M2654	2549	2649	2000 Mb	11 ms	4.8 ²	200,000	5.25 FH	5
MicroPolis 2.4	M1924	2649	2749	2100 Mb	11.5 ms	4.8 ²	250,000	5.25 FH	5
Seagate 2.4	ST42400N	2879	2979	2050 Mb	11 ms	4.5 ²	150,000	5.25 FH	5
HP 2.4	C3010	2899	2999	2000 Mb	11.5 ms	5.3 ²	300,000	5.25 FH	5
Seagate 3.4	ST43400N	3999	4099	2750 Mb	11 ms	6.0 ²	200,000	5.25 FH	5
MicroPolis 3.6	M1936	4199	4299	3022 Mb	12 ms	6.0 ²	250,000	5.25 FH	5

* Transfer rate (or throughput) depends on your Mac CPU and system configuration. For more information, ask your Hardware That Fits sales partner. **MTBF=Mean Time Between Failure LP=Low Profile HH=Half Height FH=Full Height

¹ SCSI-2 ² SCSI-2 Fast

These drives are most efficient when used with a Macintosh Quadra 800, 950 or a RealTech SCSI-2 card.

Name-brand mechanisms in the highest-quality enclosure available

WHY OUR DRIVES ARE SUPERIOR

- Fast access times
- optimum MTBF
- top-level warranties on all mechanisms
- 2-year warranty on enclosure
- and...

- A. We use the highest quality name-brand mechanisms available; fully tested and burned in
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 - C. External fuse keeps fuse replacement simple
 - D. Power cable plug-in
 - E. Two switched outlets provide power to additional peripherals, allowing 1-step system power-up
 - F. Easy-to-use pushbutton SCSI I.D. selector switch
 - G. Two 50-pin SCSI connectors for simple configuration
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Maxtor

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HEWLETT PACKARD

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Included **FREE** with your drive...award-winning Now Utilities (Version 4.0.1).

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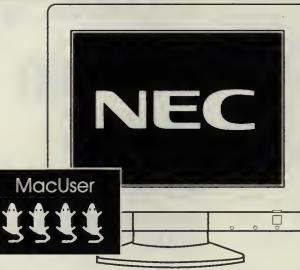
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Large 21" screen; great for color business applications. 21" diagonal, .28mm dot pitch; 135MHz bandwidth, 1024 x 768 non-interlaced.



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21-inch color display for Macintosh (NuBus™) computers. Displays two facing pages in a resolution of 1152x870 at 75 Hz and 78 dpi. Also supports 1072x810 for WYSIWYG (72 dpi) display.

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Radius Two Page Display/21 monochrome.. \$1149

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20-inch multi-frequency Trinitron® color display for Macintosh and PC computers. "On-the-fly" resolution switching. Comes with PrecisionColor software bundle.

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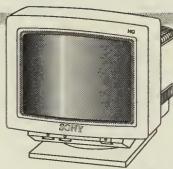
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Sony CPD-1604S

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RMO-S550 5.25" with Mac kit

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128MB Optical Cartridge.

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PowerCache Adapters\$40

FastCache Quadra - 700, 900, 950 (128K)\$399

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Radius Rocket 33™\$1979

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Madness

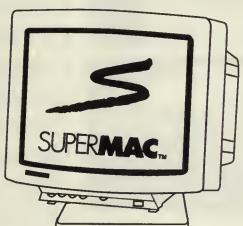
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Best buy for large screen color publishing! Its 1024x768 resolution at 72dpi means that you can design full-page projects and still have room left over. It offers precision circuitry for tight corner focus and color purity.

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105-key enhanced keyboard layout featuring 15 function keys, separate numeric pad & cursor keypad, extra-large RETURN key, ergonomically angled, 1 year warranty.

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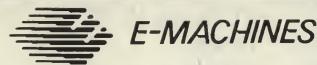
Global Village Modems

PowerPort/Gold™ **\$419**
14,000 bps data ; 9600 bps fax send/receive

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PowerPort/Bronze™ **\$179**
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Connects Power-Book Duo to large screen displays, televisions, LCDs and projectors.

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The only desktop dock with full-speed Ethernet. Choose 10BaseT or Thin Ethernet.

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1MB SIMMs	\$37
2MB SIMMs	\$69
4MB SIMMs	\$129
4MB SIMMs for LC III, Centris	\$149
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16MB SIMMs	\$529
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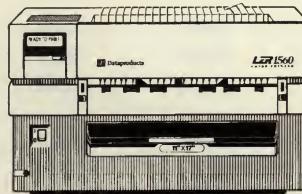
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MacWeek 4/26/93

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ClubMac 105mb External (SQ3105A)	\$749
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ClubMac 88c External (SQ5110C)	\$555
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ClubMac 88c Dual	\$1045
* ClubMac 88c will read and write 44mb cartridges, but will not format 44mb cartridges.	
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ClubMac 88MB REMOVABLES	
ClubMac 88mb External (SQ5110)	\$479
ClubMac 88mb Internal	\$459
ClubMac 88mb Dual	\$875
SYQUEST CARTRIDGES	
105mb Cartridge	\$79
44mb Cartridge	\$63
88mb Cartridge	\$97

Unformatted Capacity Model Access Time Actual MAC Capacity Internal External

Go•Drive (2.5" Hard Drives designed for Powerbooks)

80mb	GO80	17ms	80mb	\$289	\$389
120mb	GO120	17ms	120mb	\$339	\$439

ELS Series (3.5" Low Profile and Low Power)

42mb	ELS42	19ms	40mb	\$169	\$229
85mb	ELS85	17ms	82mb	\$195	\$255
127mb	ELS127	17ms	124mb	\$229	\$289
170mb	ELS170	17ms	160mb	\$259	\$319

LPS Series (3.5" Low Profile)

105mb	LPS105	11ms	100mb	\$215	\$275
120mb	LPS120	10ms	116mb	\$269	\$329
240mb	LPS240	10ms	234mb	\$339	\$399
525mb	LPS525	10ms	500mb	\$869	\$929

PRODRIVE Series (3.5" Half Height)

BEST BUY 425mb	PRO425	9ms	406mb	\$739	\$799
700mb	PRO700	10ms	670mb	\$1149	\$1209
1.0GIG	PRO1050	10ms	1001mb	\$1269	\$1329
1.2GIG	PRO1225	10ms	1165mb	\$1429	\$1489

GO•Drives carry a ONE Year Warranty. ELS drives, LPS drives, PRO drives carry a TWO Year Warranty.

Maxtor

***6300 RPM**

Unformatted Capacity Model Access Time Actual MAC Capacity Internal External

XT Series (3.5" Low Profile)

120mb	7120S	15ms	121mb	\$209	\$269
207mb	7213S	15ms	202mb	\$299	\$359

LXT & MXT Series (3.5" Half Height)

340mb	LXT-340	15ms	324mb	\$569	\$629
540mb*	MXT-540	8.5ms	521mb	\$899	\$959
1240mb*	MXT-1240	8.5ms	1150mb	\$1449	\$1509

PANTHER Series (5.25" Full Height)

1.2GIG	PO-12S	13ms	997mb	\$1199	\$1299
1.7GIG	P1-17S	13ms	1433mb	\$1449	\$1549

Maxtor drives carry a TWO Year Warranty.

FUJITSU

**FIVE
YEAR
WARRANTY**

Unformatted Capacity Model Access Time Actual MAC Capacity Internal External

3.5" HALF HEIGHT

425mb	M2623FA	9ms	405mb	\$859	\$919
520mb	M2624FA	9ms	496mb	\$879	\$939
1.1GIG	M2694	8.5ms	995mb	\$1649	\$1709

5.25" FULL HEIGHT

1.2GIG	M2266	14.5ms	1029mb	\$1289	\$1389
2.0GIG	M2652	14.5ms	1665mb	\$2279	\$2379
2.4GIG	M2654	11.5ms	2000mb	\$2499	\$2599



TOSHIBA

Unformatted Capacity Model Description Access Time Actual MAC Capacity Internal External

NEW! 213mb	MK2224FB	2.5" Low Profile	12ms	207mb	\$589	\$689
1230mb	MK538FB	3.5" Half Height	12ms	1185mb	\$1339	\$1439

Toshiba drive carries a ONE Year Warranty.

ClubMac OPTICAL Drives

**SHARP INTERNAL OPTICAL IS PERFECT FOR THE
MAC IIvx, CENTRIS 650 & Q 900/950**



Model	Capacity	Description	Seek	Internal	External
CMO-M2511A	Fujitsu	128mb	3.5" Low Profile	35ms	\$959
CMO-OD3000	Teac	128mb	3.5" Half Height	45ms	\$939
CMO-3100E	Ricoh	128mb	3.5" Half Height	45ms	\$1035
CMO-JY750	Sharp	594/652mb	5.25" Half Height	40ms	\$2255
CMO-5031E	Ricoh	594/652mb	5.25" Full Height	28ms	\$2345
CMO-Tahiti II	MaxOptix	650mb/1.0GIG	5.25" Full Height	35ms	\$3195
128mb Cartridge		3.5" Single Sided			\$39
594/652mb Cartridge		5.25" 512/1024 bytes/sec			\$95

All ClubMac Opticals include ONE cartridge and ONE Year Warranty.

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DAYSTAR DIGITAL



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25 MHZ TURBO 040		\$1329
33 MHZ TURBO 040		\$1329
FASTCACHE FOR TURBO 040 (25 MHZ)	\$249	
FASTCACHE FOR TURBO 040 (33 MHZ)	\$335	
CHARGER FOR PHOTOSHOP		\$789
COMPATIBLE WITH CLASSIC, SE, LC, SE/30, II, IIX, IICX, IISI, ICI, PERFORMANCE		
*POWERCACHE ADAPTER NOT INCLUDED	W/O FPU	W/FPU
33 MHZ POWERCACHE*	\$375	\$459
40 MHZ POWERCACHE*	\$545	\$635
50 MHZ POWERCACHE*	\$715	\$845
EQUALIZER LC		\$169
POWERCACHE ADAPTER		\$239
POWERCACHE ADAPTER		\$41

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1MB / 2MB X 8	\$32 / 65
4MB X 8 / 4MB WITH PAL	\$126 / 145
8MB / 16MB X 8	\$289 / 552

MAC IIFX

1MB / 4MB / 8MB X 8	\$37 / 130 / 553
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CENTRIS 610/650/LCIII

4MB / 8MB / 16MB	\$132 / 271 / 542
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DUO 210/230

4MB / 8 MB	\$223 / 345
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POWERBOOK 140/145/170

4MB / 6MB	\$161 / 218
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POWERBOOK 160/180

4MB / 6MB	\$173 / 248
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QUADRA 700

8MB / 16MB LOW PROFILE	\$329 / 576
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QUADRA 800

4MB / 8MB / 16MB	\$171 / 306 / 715
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QUADRA 950

16MB	\$583
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VIDEO RAM

256K VRAM FOR QUADRAS	\$23
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512K VRAM FOR LC, LCII, IIVX	\$46
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17" MULTISYNC 5FG (IN STOCK)	\$1139
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17" MULTISYNC 5FG (ACCUCOLOR)	\$1299
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COLOR DISPLAY INTERFACE CARDS

MACFG 24XP	\$495
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MACFG 24X / 8X	\$1199 / 639
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MONITORS

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FULL PG DISPLAY/MONO PIVOT	\$569/689
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PRECISIONCOLOR 8XJ / 24X	\$489 / 1499
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PRECISIONCOLOR 24XP / 24XK	\$489 / 815
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UNIVERSALCOLOR 24 SM / LG	\$499 / 839
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Cyclone 3.5 Optical Drive

Extra Cartridges: '35

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If you guessed that by spinning a CD at twice the speed, the Toshiba XM 3401 drive mechanism inside this Spin CD ROM drive can access data twice as fast, that expensive college education isn't going to waste. In fact, it breaks the 200 msec access time barrier. And offers sustained transfer rates of 330 KB/sec. Other CD ROM drives are left with their jaws hanging wide open. This drive is your best choice if you're running Quicktime® movies, photo CD, or multimedia apps. Pretty smart.

Spin Double Speed CD ROM Drive (External only) \$499

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Introducing the DEC DSP-3105 1-gigabyte drive. This Eddy award-winning monster moves like Ricochet Rabbit on double espresso. It's the world's fastest 3.5 inch drive. Thanks, in part, to a 5400 RPM spindle speed and a whopping 512K drive cache. With our minimum-footprint Cyclone™ enclosure, and a great price, and 5-year warranty, no one can touch it for value. Says MacUser: "It's a dream drive."

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Syquest 5110C 44/88 Drive \$589

Syquest 88 MB Removable \$489

Syquest 44 MB Removable \$389

Syquest Media

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Formatted 44 MB \$85

Formatted 88 MB \$139



ZERO FOOTPRINT DRIVES

We've gotten letters lately - mostly in crayon - from a few folks asking why we call these drives "zero footprint" when they obviously exist in three dimensions and take up space. We'd like to point out that when placed under your Plus or Classic or SE it takes up no more space than the computer already does. Zero. Neat trick, huh? Our sturdy zero-footprint drives feature a number of different mechanisms from makers like Conner, Quantum, Toshiba. Check the matrix below for the capacity you need. And please, put down that crayon.

Capacity (MB)	Model Number	Average Access Time (msec)	Transfer rate (K/sec)	MTBF (Hours)	MFG warranty (months)	Internal Drive Price	External Drive Price	Cyclone Drive Price
Conner								
85	CP-30080E	16	1300	150000	24	\$199	\$269	
120	CP-30100	16	1300	150000	24	\$269	\$339	
170	CP-30170E	16	1400	150000	24	\$279	\$359	
213	CP-30200	15	2000	150000	24	\$349	\$419	
Quantum								
85	ELS 85S	17	1800	250000	24	\$199	\$269	
127	ELS 127S	17	1800	250000	24	\$269	\$339	
170	ELS 170S	17	2000	250000	24	\$299	\$369	
240	LPS 240S	16	2300	250000	24	\$399	\$469	
80 (Pwrbk)	GRS-80	17	1900	150000	12	\$349		
Toshiba								
210 MB (Pwrbk)	MK-2224	12	1800	150000	12	\$549		
1.2 GB	MK-538	12	2800	250000	36	\$1149	\$1199	\$1249
DEC								
1.05GB	DSP-3105	9.5	2600	250000	60	\$1699	\$1749	\$1799
Seagate								
456MB	ST-3550N	12	3500	250000	36	\$849	\$899	\$949
1.05GB	ST-11200N	10.5	3200	200000	60	\$1199	\$1249	\$1299
Fujitsu								
520MB	M2624FA	9	2700	200000	60	\$899	\$949	\$999
1.06 GB	M2694FA	9	2800	200000	60	\$1549	\$1599	\$1649

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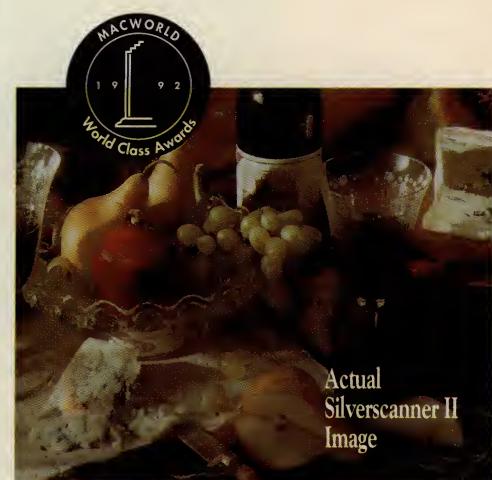
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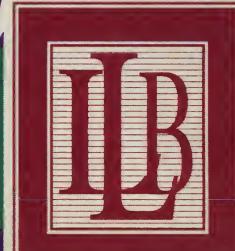
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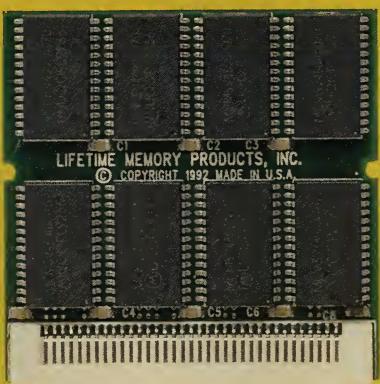
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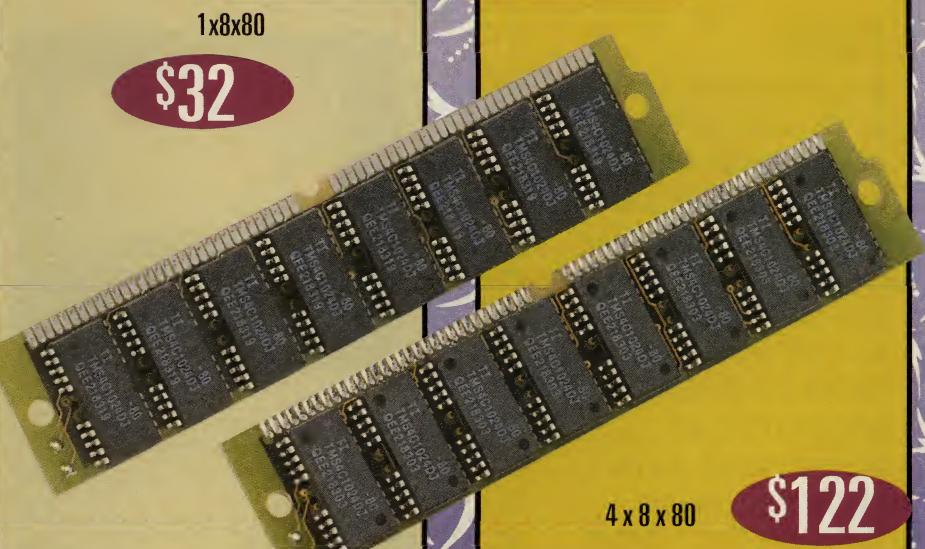
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32

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34

1x8x70 (fx)

36

2x8x80

61

2x8x70

63

4x8x80

119

4x8x70

121

4x8x80 (fx)

124

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126

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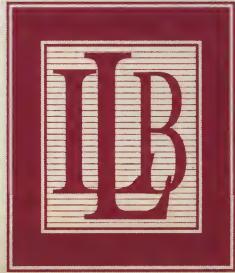
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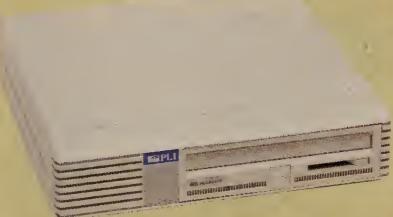
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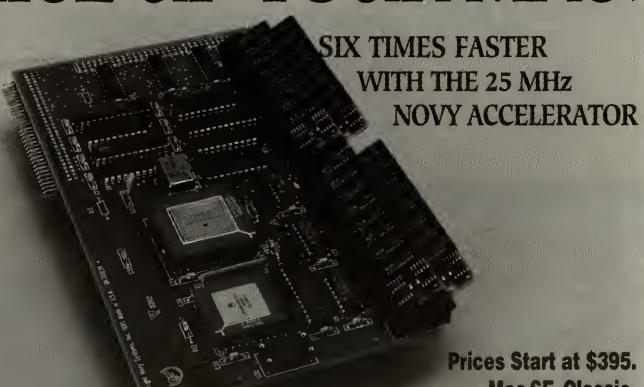
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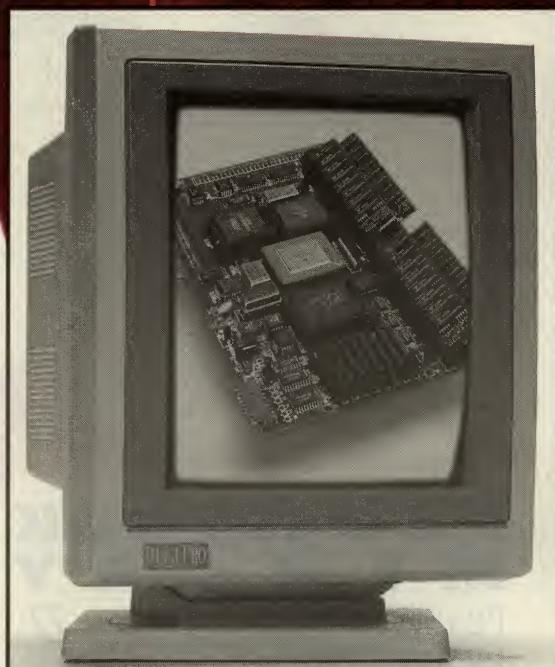
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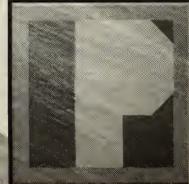
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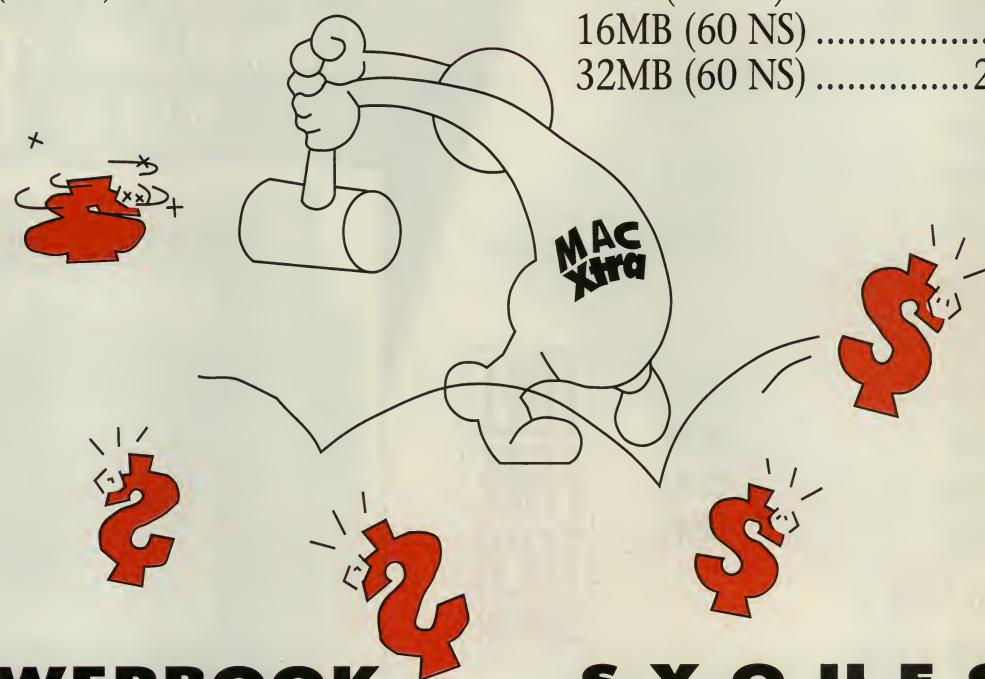
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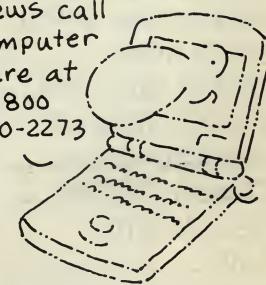
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765 MB	M1624	\$1075	\$1135	
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1.2 GB	M2694	3.5"	1475	1535
1.2 GB	M2266	5.25"	1189	1309
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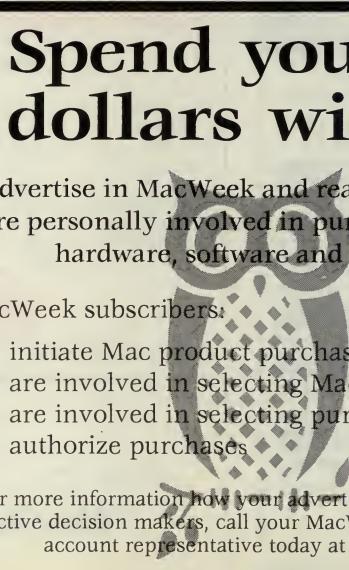
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- (ms)
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127MB	ELS127	3.5 1"	17	\$235	\$295
170MB	ELS170	3.5 1"	17	\$255	\$315
240MB	LPS240	3.5 1"	10	\$369	\$429
525MB	LPS525	3.5 1"	10	\$849	\$959
700MB	PRO700	3.5 HH	10	\$1105	\$1165
1.0GB	PRO1050	3.5 HH	10	\$1236	\$1295
1.2GB	PRO1225	3.5 HH	10	\$1429	\$1489
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• ELS, LPS, PRO drives have two year warranty

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330MB	LXT-340	3.5 HH	15	\$599	\$659
535MB	LXT-535	3.5 HH	12	\$959	\$1019
540MB	MXT540SL	3.5 HH	8.5	\$975	\$1035
1.2GB	MXT1240S	3.5 HH	8.5	\$1599	\$1659
1.2GB	PO-12S	5.25 FH	13	\$1295	\$1395
1.7GB	P1-17S	5.25 FH	13	\$1595	\$1695

• 3.5" drives have one year warranty

• 5.25" drives have two year warranty

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1.6GB	ST41600N	5.25 FH	11.5	\$1679	\$1779
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3.4GB	ST43400N	5.25 FH	11	\$3399	\$3499

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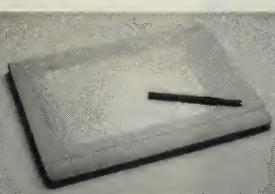
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33MHz	\$469
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50MHz	\$849
PowerCache Adapter	\$42
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Quadra 950	\$382
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TransWarp	2300	40MHz	\$249
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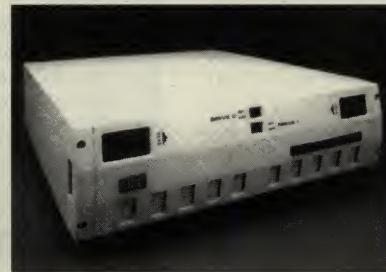
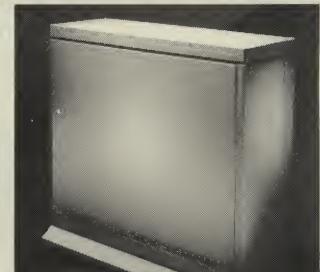
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M2624FA	520	3.5	12	\$ 770	\$862
M2266S	1079	FH	14	\$1195	\$1312
M2694	1080	3.5	10	\$1489	\$1581
M2652S	1750	FH	11	\$2083	\$2200
M2654S	2061	FH	11	\$2277	\$2395

DEC

5 YEAR WARRANTY

TYPE	MB	SIZE	SEEK	INT.	EXT.
DSP3085S	850	3.5	9.5	\$1212	\$1307
DSP3105S	1050	3.5	9.5	\$1248	\$1343
DSP3160S	1660	3.5	10	\$1782	\$1877
DSP5200S	2000	FH	12.5	\$1939	\$2056
DSP5350S	3500	FH	11.5	\$3300	\$3421

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ST3550N	456	1"	12	\$ 824	\$ 918
ST3600N	540	1"	10.5	\$ 859	\$ 953
ST4767N	665	FH	12	\$1228	\$1345
ST1980N	860	3.5	9.9	\$1082	\$1175
ST41200N	1037	FH	16	\$1053	\$1160
ST11200N	1037	3.5	10.5	*\$1146	\$1250
ST41650N	1420	FH	15	\$1435	\$1545
ST41600N	1420	FH	11.5	\$1679	\$1789
ST42100N	1900	FH	12.9	*\$1807	\$1924
ST42400N	2100	FH	11	*\$2405	\$2515
ST43400N	2900	FH	11	\$3015	\$3125

S P E C I A L S

TYPE	MB	SIZE	SEEK	INT.	EXT.
Fujitsu	520	3.5"	12	\$ 770	\$ 870
Seagate	1.04GB	3.5"	10	\$1169	\$1250
Fujitsu "Optical"	128	3.5"	30	\$1020	\$1130
Seagate	1900	FH	12	\$1725	\$1870

MAXTOR

1 YEAR WARRANTY

TYPE	MB	SIZE	SEEK	INT.	EXT.
7213SY	213	1"	15	\$ 320	\$ 420
LXT340SY	340	3.5	13	\$ 570	\$ 670
LXT540SY	540	3.5	8.5	\$ 930	\$1050
1240S	1240	3.5	8.5	\$1450	\$1550
P012SH	1059	FH	13	\$1275	\$1399
P017SH	1345	FH	13	\$1557	\$1682

QUANTUM

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TYPE	MB	SIZE	SEEK	INT.	EXT.
LPS240S	240	1"	16	\$ 355	\$ 455
LPS525S	525	1"	10	\$ 895	\$ 995
PD700S	700	1"	10	\$1155	\$1240
PD1050S	1050	3.5	10	\$1324	\$1399
PD122S	1200	3.5	10	\$1451	\$1539

CONNER

1 YEAR WARRANTY

TYPE	MB	SIZE	SEEK	INT.	EXT.
30170	170	1"	17	\$ 260	\$ 360
30200	212	1"	12	\$ 333	\$ 430
30540	545	1"	10	\$ 872	\$ 972

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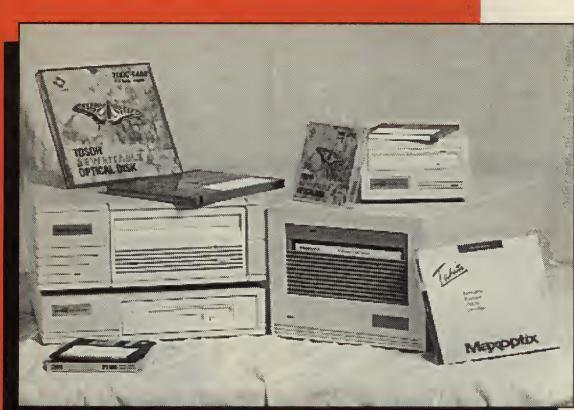
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85Meg	17ms	3600	Quantum	2 Years	\$195	\$275
127Meg	17ms	3600	Quantum	2 Years	\$259	\$339
130Meg	17ms	3600	Maxtor	2 Years	\$239	\$319
170Meg	17ms	3600	Conner	2 Years	\$269	\$349
213Meg	15ms	3600	Maxtor	2 Years	\$329	\$409
213Meg	12ms	4500	Conner	2 Years	\$339	\$419
240Meg	16ms	4300	Quantum	2 Years	\$354	\$425
340Meg	13ms	3600	Maxtor	1 Year	\$589	\$669
520Meg	12ms	4400	Fujitsu	5 Years	\$829	\$909
540Meg	8.5ms	6300	Maxtor	2 Years	\$999	\$1079
560Meg	10ms	5400	Micropolis	5 Years	\$1059	\$1139
877Meg	12ms	3600	Toshiba	5 Years	\$1059	\$1139
1050Meg	10ms	5400	Micropolis	5 Years	\$1319	\$1389
1080Meg	9.5ms	5400	Fujitsu	5 Years	\$1499	\$1579
1100Meg	10.5ms	5400	HPackard	5 Years	\$1529	\$1599
1230Meg	12ms	3600	Toshiba	5 Years	\$1329	\$1399
1200Meg	8.5ms	6300	Maxtor	3 Years	\$1579	\$1659
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Capacity	Model	Speed	Internal	External
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Media	44Meg \$64	44Meg 5 pack \$315	88Meg \$98	88Meg 5 pack \$479

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Includes: Trantor Driver Software with Music play software, cables, 1 year warranty. All CD Drives are Kodak multisession Photo CD Compatible.

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Toshiba	200ms	330KB/sec	Single Disk	\$549	\$589
Toshiba	200ms	330KB/sec	Battery Powered	N/A	\$729
Pioneer*	380ms	150KB/sec	6 Disk Changer	N/A	\$899
Pioneer	270ms	612KB/sec	6 Disk Changer	N/A	\$1299
CD's (sold only with CD Drive)	Encyclopedia \$55	World Atlas \$22	Us History \$35 Family Doctor \$72	GuinessRecords \$45	Speakers \$90 Caddies \$9

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Includes: Retrospect Backup Software, 1 Tape, Cables, and a 1 year warranty

Capacity	Type	Brand	Speed	Internal	External
250Meg	QIC 150	Archive	7MB/min	\$459	\$499
2Gig	DAT	Archive	11MB/min	\$1039	\$1079
2Gig	DAT	Hewlett Packard	12MB/min	\$1259	\$1299
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We have Hewlett Packard and Archive DAT Autoloaders for large backup.		Tapes DC6250 6250 5 pack \$29		90 Meter DAT \$17	DAT 5 pack \$75
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650Meg	27ms	Hewlett Packard	MultiFunction	\$2559	\$2599
1Gig	35ms	Maxoptix Tahiti IIM	MultiFunction	\$2959	\$2999
Media 20Meg	20Meg 5 pack \$23	128Meg \$95	128Meg 5 pack \$39	650Meg 5 pack \$189	1Gig 1 Gig 5 pack \$189
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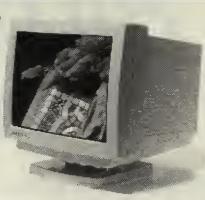


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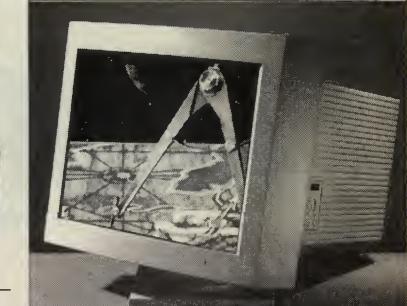


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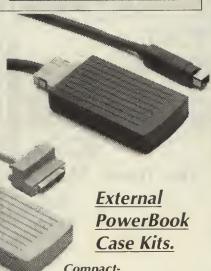
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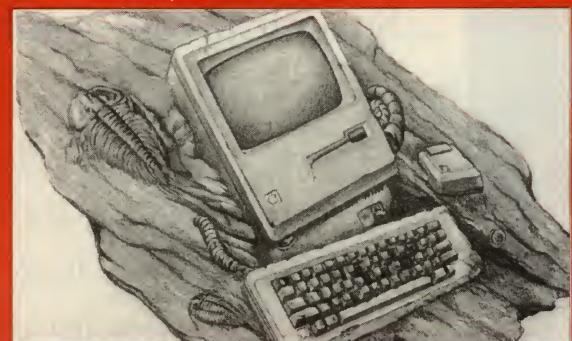
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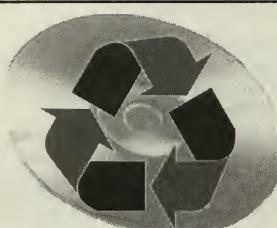
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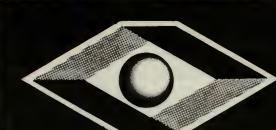
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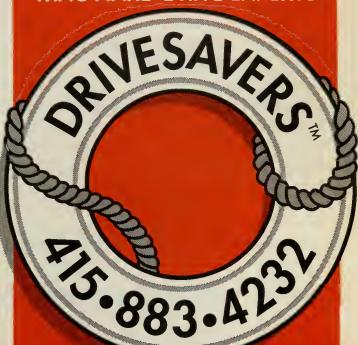
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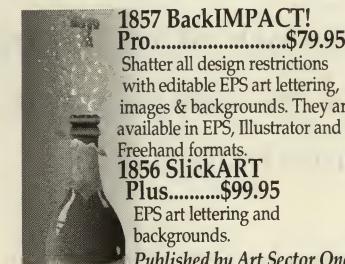
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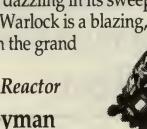
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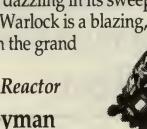
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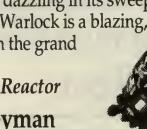
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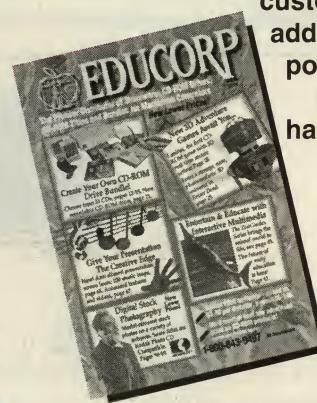
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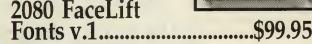


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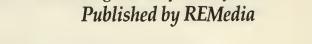
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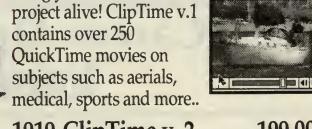
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Security*From Page 1*

AOCE (Apple Open Collaboration Environment).

But Apple's representative at the NSA briefing, Gursharan Sidhu, technical director of collaborative computing and leader of the AOCE project, said he is not worried that the government will force an encryption scheme on the industry.

"We were given the impression that they are very open to suggestions," Sidhu said, adding that the government is faced with a growing conundrum as it tries to simultaneously protect privacy and maintain its ability to tap law-breakers' communications.

"People have the idea that in cellular the security of communications has gone away, so there is pressure to encrypt. [Without a back door], even the casual criminal would be able to communicate with invincible security," Sidhu said. "Law-enforcement agencies wouldn't be able to collect intelligence."

A spokesman for NIST said Capstone will not be introduced unless the president's review of national encryption policy concludes it is needed. But he also said the Department of Defense and NSA are already working to develop a PCMCIA card-based implementation of Capstone for a classified defense messaging system.

The NSA confirmed it is working on Capstone but could not confirm the Capstone PCMCIA card project.

Clipper and Capstone use a "key escrow" technology that lets law-enforcement agencies with a court order unscramble conversations and documents (see story, this page). To reduce the potential for wiretap abuses, two agencies to be named by Attorney General Janet Reno will hold half of each key. The NSA said the key escrow agents will not be law-enforcement agencies.

Privacy advocates complained that the algorithms that perform Clipper scrambling functions will remain classified. Encryption technologies typically gain acceptance only after cryptographers pore over

Plan keeps encryption keys in escrow

The White House last week said the Clipper chip will use a key escrow scheme to guarantee the public a maximum amount of privacy without shutting out law-enforcement agencies that need to tap criminals' communications.

Key escrow involves the splitting of encryption keys into two pieces, each of which is held by an independent agency. Police with a wiretap order must retrieve both parts of the key to listen in on voice and data calls.

The escrow scheme, true to its Cold War heritage, is full of cloak-and-dagger drama. The National Institute of Standards and Technology and Professor Dorothy Denning, chairwoman of the Georgetown University computer science department in Washington, D.C., described the process:

Clippers will be programmed in lots of about 300 chips. Agents of the two escrow agencies — as yet unidentified — will meet in a secure computer-information facility, known in spy circles as a SCIF, a

the component algorithms and key management systems.

"We can't protect the key escrow features if we reveal the algorithm to the public ... that's caused some heartburn," said John Podesta, staff secretary to President Clinton. "I'm not suggesting that the public should trust us any more than any other government agency, but we are doing a more comprehensive review [than any previous administration]."

Podesta said the Clinton team is taking a free-market approach to encryption, in contrast to previous administrations, which tried to legislate simplified approaches.

"In the wireless communications environment, we have to move the ball forward on security and privacy," Podesta said. "The jury's still out on whether [Clipper] is the answer."

Jim Bidzos, president of RSA Data

vault at the chip manufacturer site that contains a laptop computer and chip-programming equipment. Each agent enters into the computer a long prime number that is used to generate 300 keys.

After a series of mathematical contortions, the two agents create three floppy disks. Two of them each contain one-half of the 300 device keys and a master key, called a "family key" by the National Security Agency, needed to decrypt messages sent by all the chips in the lot. The third floppy contains a list of whole encryption keys, and it is used to program the lot of Clipper chips.

Then the agents leave the SCIF carrying a floppy with their half of the keys, the master floppy is destroyed and — for extra security — the laptop computer can be destroyed.

Clipper chips will be manufactured by Torrance, Calif.-based Mykotronix Inc. and other companies that agree to adhere to the NSA's security standards.

—By Mitch Ratcliffe

Security of Redwood City, Calif., said the NSA is using Clipper and Capstone in an attempt to confuse the market for privacy-enhancing technologies. "It takes three or four years for this kind of proposal to die," Bidzos said. Computer and communications companies might withhold support for any standard, giving the NSA more time to prepare for the encrypted world, he said.

Computer Professionals for Social Responsibility, a Washington, D.C.-based public-interest group, has filed 11 Freedom of Information Act requests for access to Clipper development records. The group suspects the NSA and NIST violated the Computer Security Act of 1987, which limits the NSA's role in development of public encryption technologies to providing advice and assistance. NSA said it developed both chips. □

Pen Mac*From Page 1*

provide some of the recognition technology that will allow certain pen Mac models to convert handwriting to editable text within any application. CIC developed Pen-Mac, a forthcoming set of extensions that add pen input and handwriting recognition to the Macintosh operating system (see MacWEEK, Jan. 18).

Third-party developers will have to customize their software to include gesture-based commands in their programs' interfaces, however.

Apple reportedly will unveil a pen application programming interface for ink at next month's Apple Worldwide Developers Conference in San Jose, Calif. Sources said Apple is also working on a tool kit for in-house developers to add pen support to their applications.

The new portable will be the first Mac model not sold retail. Sources said the federal government is on Apple's list of potential buyers.

The pen-based device is intended specifically for vertical markets. For example, it could be used for medical record keeping, forms entry or

check-list applications for retail salespeople.

Apple reportedly is looking at a number of other pen-Mac prototypes. One model, based on an upcoming low-power version of the 68040, diverts CPU cycles from screen updates when the user takes notes to speed handwriting recognition.

Sources said Apple is also considering equipping future nondocking pen-Mac models with infrared communications hardware similar to Hewlett-Packard Co.'s 95LX palmtop computer. □

Analysis*From Page 1*

according to the theory, corporate information systems managers might be willing to consider the merits of the Mac interface, especially when it comes with the support of a company as respected and entrenched in the business market as Novell.

"They [Apple and Novell] don't imagine that they will obsolete Windows," one source said, "but they are looking for feedback on how to best target users moving from DOS to a GUI."

The other targeted users are those who now run Microsoft Windows 3.1 but expect to move to Windows NT. According to sources familiar with the Apple-Novell project, the companies believe a taste of the Mac, combined with NetWare services, might win over even dedicated Windows users and their managers.

But analysts questioned how many PC users and managers are really looking for an alternative to the Microsoft environments and whether Apple and Novell will be able to persuade even the open-minded to switch to their new environment.

"The critical factor that will determine their success," said one developer, "is how many of the well-known, mission-critical, horizontal market applications will run on this machine on Day One."

Although DOS applications will run in the Apple-Novell environment, as of now Windows applications apparently will not. Unless that changes, the two companies will be in the difficult position of asking users to give up access to the most innovative applications

now being written for the PC.

The only way to fill that gap will be to coax Mac developers to port quickly to the new Intel environment. But many Mac applications are not yet readily portable, and some Mac developers — already facing the transition to the PowerPC — are certain to hesitate at the cost of porting to another platform with uncertain market prospects.

"I don't think anyone has dealt with the implications of maintaining applications on all these platforms," another developer said. "It's a very simple vision but not a very simple real-world solution."

Raising the cost of supporting applications could even play into Microsoft's hands, according to a developer. "You have to be a company the size of Microsoft to support these investments, so it's to Microsoft's advantage in the long run," he said.

Analysts also pointed out that it will be difficult for Apple and Novell to preserve the charm of the Mac, a system that has always depended on closely integrated software and hardware, when they don't control the hardware.

Bill Bluestein, a research analyst at Forrester Research Inc. of Cambridge, Mass., said he thinks the best prospects for Apple and Novell are not primarily PC sites.

"The market is companies that have made a major commitment to the Mac but have a lot of PCs," Bluestein said. "If this thing works, they could have the same interface on all machines and have the option of buying less-expensive PC hardware." □

PowerPC*From Page 1*

\$374. Apple, as the largest early customer for the chips, is likely to pay far less, sources said.

Intel said Pentium pricing will not be announced until next month, when the chip ships. But industry sources said the Intel processor is likely to cost at least twice as much as PowerPC in comparable volumes.

The price differential is largely a reflection of the chips' die sizes. The PowerPC 601 measures 11 by 11 millimeters, while the Pentium, accord-

ing to Intel, is 16.8 by 17.6 millimeters. Smaller size also means lower power consumption: The 66-MHz Pentium is rated at 13 watts, while the PowerPC 601 will draw 6.5 watts at 50 MHz and 9 watts at 66 MHz.

"It's hard to evaluate the benchmarks without more details than they've provided about the systems they're testing on, but the numbers do look impressive," said Michael Slater, editor of the Microprocessor Report in Sebastopol, Calif. "There's nothing else in this performance class at prices like those." □

PowerPC vs. Pentium**PowerPC 601**

Die size: 11x11 millimeters

Transistors: 2.8 million

Process technology: 0.65 microns

SPECmark92 performance at 66 MHz: Integer 60; floating point 80

Price: \$280 (50 MHz); \$374 (66 MHz)

Pentium

Die size: 16.8x17.6 millimeters

Transistors: 3.2 million

Process technology: 0.8 microns

SPECmark92 performance at 66 MHz: Integer 64.5; floating point 56.9

Price: \$700 to \$950 (est.—66 MHz)

Apple-Novell

From Page 1

in San Jose, Calif., next month. The collaboration will not be formally announced until fall.

The new software, based on an Apple project code-named Star Trek (see MacWEEK, March 22), is intended to provide a graphical-interface alternative for DOS users who might otherwise upgrade to Microsoft Windows or the upcoming Windows NT operating system.

The first version of the software will provide

the System 7 interface, a QuickDraw emulator and support for QuickDraw GX, a translator that maps Apple's hierarchical file system to the DOS directory structure, and integrated AppleTalk and NetWare network services.

It will lack support for Apple events; QuickTime; the Data Access Manager; the Edition Manager; the Macintosh Communications Toolbox; and hardware not found in standard Intel systems, such as SCSI, NuBus and the Apple Desktop Bus.

The software, however, will include an extension mechanism, and ports of QuickTime, AppleScript and AOCE (Apple Open Collaboration Environment) to the environment are slated for the second half of next year.

The linchpin in the system will be a translation layer between the ported Macintosh Toolbox and DR DOS. When ported Mac applications call routines in the Toolbox, it will translate the calls and pass them to DOS if necessary.

All the tools needed to port Mac applications written in C and C++ to the Apple-Novell environment are available now on standard DOS platforms. The partners plan to anoint a suite of DOS development tools as "canonical," including Metaware Inc.'s High C/C++ 386 compiler and mdb debugger and Phar Lap Software Inc.'s 386Link object linker, sources said. Developer documentation is due this summer.

Apple officials reportedly believe that porting the Mac OS to Intel-based computers will increase the number of programs that run in native mode on upcoming PowerPC-based Macs because the lure of the huge DOS market will give Mac developers an incentive to make their code portable. Software ported to the Apple-Novell environment will also be portable to the PowerPC—and to other RISC processors Apple may support in the future.

The Companion name is designed to help Apple establish a single identity for its expanding suite of cross-platform technologies, so when a user wants to run a QuickTime movie on an Intel machine, something like a "Companion-inside" label will let them know the computer can support it.

For the long run, Apple, IBM Corp. and their joint offshoot, Taligent Inc., are working on kernels that will provide an almost universally portable user environment. The kernels will act as hardware interface in the place of current OSes, and application programming interfaces such as the Mac user interface will be added as modules that run on top of these kernels.

Sources said the Mac interface may also change, so much so that by 1996 the Finder could be unrecognizable to the user of today. David Nagel, the Apple executive who took charge of the Macintosh Software Architecture Division early this year, is reportedly pushing for an overhaul of the Mac graphical user interface on all platforms; in part, Nagel is said to believe the interface should be modernized to incorporate new ideas developed by the company's Advanced Technology Group, which he continues to lead.

In addition to building in QuickTime, AOCE, AppleScript and other extensions, the update would incorporate a new Finder metaphor and an object-oriented, compound-document architecture.

These future versions of Apple's OS will reportedly provide context-sensitive views of network services and information. A context-sensitive Finder might switch to a newspaper interface when the user requests articles on a competitor or a real-time trading terminal when the user requests a stock report.

Novell seems to have embraced this vision. Sources said the Finder will ultimately become the interface to NetWare services, output devices and resources such as databases.

Apple and Novell declined to comment. □

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Andrew Gore and Henry Norr contributed to this report.

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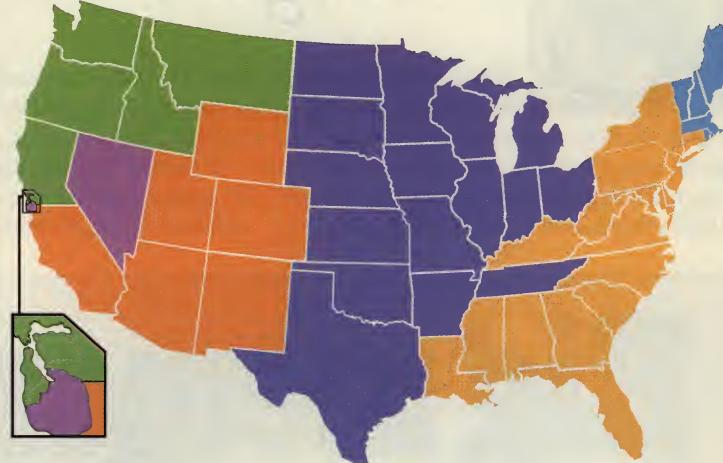
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Paring PowerBook 145 price

These may not be the best of times to be taking cheap shots at current events, but the Knife argues that decorum has never been much of a factor in these matters. Therefore, there's little reason to start being delicate

now. The subject under the lamps this week is the disturbing trend in our culture to indulge in hero worship.

In the San Francisco Bay area, for example, commerce almost ground to a halt as followers mourned the loss of a leader. The Knife is will-

ing to give credit where credit is due, but elevating any mortal to this godlike status is unhealthy. Besides, there are other quarterbacks, and it's only fair that Kansas City get a chance to bask in the reflected glory.

But then, change is almost always uncom-

fortable and usually takes a bit of getting used to. Some are still having trouble with the fact that Performa systems are sold without System installation disks. Sure, Apple includes a nearly adequate backup utility, but cutting costs by omitting a handful of floppies seems like false economy at best.

These same people are probably going to be even more appalled in June when Apple unveils the PowerBook 145B, its attempt to capture the mass market it only titillated with the PowerBook 100 fire-sale blowout. The final price of this reworked PowerBook 145 has yet to be determined, but the Knife's sources tell him that Apple will take a page from its Performa marketing plan and omit System installation disks from this cheapest of all PowerBooks.

In addition to coping out on the floppy issue, Apple has further cut costs by redesigning the motherboard to be less expensive to manufacture. Unlike the current PowerBook 145, the 145B will have 4 Mbytes of RAM soldered onto the logic board. As with the 145, RAM capacity will max out at 10 Mbytes.

Dock maintenance. When a Mac model fails to live up to sales projections, you can bet that there's someone somewhere hidden away in a Cupertino cubicle measuring the shortfall. In the case of the Duo, the Knife's sources report that Apple is tracking the shortfall at about 30 percent. Now, in theory, the Duo twins should be doing just fine, thank you. The docking concept is both well-conceived and well-executed. Maybe it's the lack of an integrated floppy drive ...

If indeed it's the missing floppy and not the concept of docking that's stymieing sales, then the new dock Apple's planning for all PowerBooks may be a hit. The Knife reports that this "universal" dock will have the features you need to transform your PowerBook into a powerful, expandable desktop machine, including a CD-ROM bay and a PDS slot.

Both ends of the line. The announced introduction of the Newton is so close you can almost smell it. Sources insist that Apple's July deadline is absolutely doable, although availability still remains a question mark. And since this initial Newton will be the first member of a family, it needs its own name. The leading candidate at press time was "PowerPad." Based on the features Apple has disclosed so far, calling this mildly featured product a PowerPad verges on the oxy-moronic, although the moniker does have a certain inevitability about it.

Meanwhile, down on the PowerPC Mac ranch, the word is that developers are starting to chafe over the continuing absence of Mac-based compilers. Sources allege that the fruits of Apple's PowerPC compiler projects have so far been disappointing. The current solution, compiling on an IBM RS6000 workstation, seems rather onerous now that prototype PowerPC Mac cards are available. It reminds the Knife of the early days of the Mac, when developers complained mightily about having to buy a Lisa to compile their code. □

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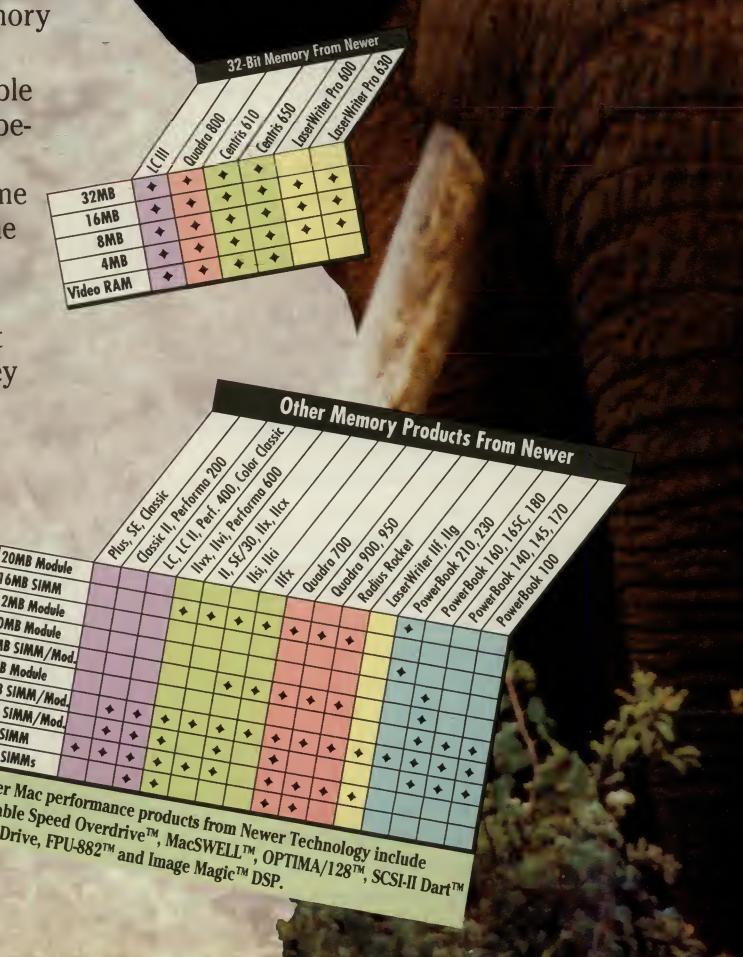
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